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ABSTRACT

This study examined the effects of participation in Chapter 1 programs on students' educational outcomes. A total of 52 students at an elementary school in Maquoketa, Iowa, were divided into a primary group of students who participated in a Chapter 1 program during grades 1 or 2; an intermediate group of students who participated in a Chapter 1 program during grades 3, 4, or 5; and a nonparticipant group. Several educational outcomes were assessed from kindergarten through grade 5. The relationships between several demographic variables and students' participation in Chapter 1 programs were determined. The following results are reported: (1) the intermediate group exhibited lower IQ scores than the primary and nonparticipant groups; (2) the intermediate group scored lower than the primary and nonparticipant groups on measures of reading proficiency; (3) primary and intermediate group children were assigned to classroom reading groups of an average or below average level; (4) intermediate group children had lower grade point averages in science and social studies in grades 4 and 5 than nonparticipating children; and (5) the intermediate group received lower teacher ratings of work habits than the primary and nonparticipant groups. It is concluded that Chapter 1 participation has a sustained effect on students' educational outcomes. A 29-item reference list is provided. Copies of student progress reports are appended. (BC)

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AN OUTCOMES BASED EVALUATION OF THE SUSTAINING EFFECTS OF CHAPTER 1 PARTICIPATION USING MEASURES OF REGULAR EDUCATION PERFORMANCE IN GRADES KINDERGARTEN THROUGH FIVE

by

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CHAPTER I

STATEMENT OF THE RESEARCH PROBLEM AND ITS DEVELOPMENT

Background

The mission of Chapter 1 of the Education and Consolidation and Improvement Act is to help meet the educational needs of children in schools with high numbers of students from low-income families. A federal funding program, Chapter 1 calls for improved achievement of educationally deprived children in their regular classroom performance. Educationally deprived children are defined as "children whose educational attainment is below the level that is appropriate for children of their age" (Department of Education, 1989, p. 21758). More specifically, Chapter 1 regulations state that educationally disadvantaged children should "succeed in the regular educational program of the LEA (local education agency)" (Department of Education, 1989, p. 21758) by attaining grade-level proficiency and improving achievement in basic and advanced skills as measured by student performance on standardized tests.

At its discretion, an LEA may state Chapter 1 program outcomes in terms of student performance on criterion-referenced tests, dropout rates, attendance, retention rates, locally developed outcomes, teacher judgments, or grades. Assessment of progress toward these outcomes becomes the basis for an annual evaluation of a Chapter 1 program.

In addition to these annual evaluations of the impact of the Chapter 1 program on the achievement of participants, each LEA is to determine the extent to which Chapter 1 students sustain improved performance after they no longer receive Chapter 1 services. Termed "sustaining effects studies," each district is to conduct such an evaluation once every three years. The minimum requirement for a sustaining effects study is to report and analyze standardized test scores of students one year following dismissal from the Chapter 1 program. No guidelines or recommendations are provided for assessment of sustaining effects using an outcomes based approach.

Significance of the study

Prior to this study, no attempt had been made to conduct an sustaining effects study of the Chapter 1 remedial reading program in the Maquoketa Community Schools. This study was designed to go beyond the requirement to use standardized test scores by analyzing the sustaining effects of Chapter 1 participation using outcome measures of regular classroom performance.

Statement of the Problem

Does participation in the Chapter 1 remedial reading program help students succeed in the regular educational program on the outcomes of attendance, reading achievement, reading group placement, voluntary reading, participation in recreational reading programs, attitudes towards reading, report card grades, and teacher judgments of work habits and attitudes?

Delimitations

The findings of this study were based upon data contained in the cumulative files of 52 fifth grade students enrolled in the Briggs Elementary School located in Maquoketa, Iowa, during the 1990-91 school year. Of these, 19 students had received Chapter 1 services for at least 1 year while in grades K - 5.

The information presented is primarily useful to teachers and administrators responsible for evaluation and program improvement efforts of Chapter 1 programs.

Assumptions

For the purposes of this study, it was assumed that Chapter 1 reading utilized an instructional model which emphasized remediation based upon a diagnosis of the student's needs, the development of an individual educational plan which was implemented in coordination with regular classroom reading instruction, and that instruction took place either individually or in small groups in a resource room separate from the regular classroom. It was further assumed that the standardized reading tests, IQ tests, and other measures of student performance on program outcomes used by the district were valid and reliable measures of student achievement, ability, attitudes, and behaviors.

Definitions

Elementary and Secondary Education Act (ESEA). This is Public Law 89-10, enacted in 1965, which provided funds for programs to help educationally disadvantaged children.

Chapter 1 (Title I). This is Part A of Chapter 1 of Title I of the ESEA law, as amended, which provides financial assistance through state education agencies (SEAs) to local education agencies (LEAs) to meet the special educational needs of educationally deprived children in school attendance areas with high concentrations of children from low-income families. Because "Chapter 1" was known as "Title I" prior to 1981, all references to Title I have been changed to Chapter 1.

Evaluation. This is a system for collecting, analyzing, reporting and utilizing data related to program activities for the purpose of determining the merit, value, or impact of program activities.

GE. The grade equivalent (GE) is an index of student achievement on standardized tests based upon the average test performance of students at various grade levels within the norming sample.

NCE. This is the normal curve equivalent (NCE) which is reported by the publishers of some of the standardized tests used in the Maquoketa Schools. Based on the percentile rank, the NCE is a normalized, equal interval index of standardized test performance which meets the requirements for the interval scale of measurement.

Gain. This is a measure of improved reading comprehension as determined by a comparison of pretest and posttest scores on standardized reading tests.

Chapter 1 treatment effect. This is the gain attributed to participation in Chapter 1 remedial reading instruction as measured by the difference between student gain with Chapter 1 service and an estimate of the predicted gain that would have been without the Chapter 1 intervention. According to the Chapter 1 evaluation model used in Maquoketa, it is predicted that students will demonstrate no change in NCE units between pretesting and posttesting. However, because it is also assumed that Chapter 1 eligible students will exhibit a loss in NCE units without Chapter 1 service, Chapter 1 treatment effects are defined as any gain in NCE units between pretesting and posttesting.

Sustaining effects. This is a measure of the impact of participation in the Chapter 1 remedial reading program after students no longer receive Chapter 1 services. Chapter 1 regulations specify that, at minimum, sustaining effects are to be estimated by the use of performance on a standardized reading test administered to students 12 months after they no longer receive Chapter 1 services.

Low socioeconomic status. Students who participated in the federally funded free or reduced price school lunch program were defined as coming from a family with low socioeconomic status.

High socioeconomic status. Students who did not participate in the federally funded free or reduced price lunch program were defined as coming from a family with high socioeconomic status.

Ability or IQ. This is the intelligence quotient as measured by the Cognitive Abilities Tests which was administered to students in the study at grades three and five. The Cognitive Abilities Tests provided Verbal, Quantitative, and Non-Verbal IQ scores for each student.

Traditional family status. This referred to children who lived in households consisting of natural father, mother, and child (along with other siblings).

Non-traditional family status. Students in non-traditional families lived in households which may have consisted of a single parent, a divorced and remarried parent, with other relatives, in foster care, or in any household other than that consisting of natural father, mother, child and any additional siblings.

Success in the regular program. Success in the regular program was indicated by regular attendance, average grade equivalency on standardized reading tests, placement in reading groups at an average level, evidence of voluntary reading such as circulation of library books and active participation in recreational reading programs, positive attitudes towards reading, grade point average of 2.0 or higher in science and social studies classes in grades three and four, and satisfactory work habits and attitudes as rated by classroom teachers.

Teacher judgment of work habits and attitudes. For the purposes of this study, teacher judgment of work habits and attitudes was an index based upon the "work habits and attitudes" portion of the report card. Because the report card terminology was different for different grade levels, this index was defined for each grade level. At first grade, "satisfactory" was assigned a value of 3, "improving" was assigned a value of 2, and "needs improvement" was assigned a value of 1. At second grade, "satisfactory" was assigned a value of 1 and "needs improvement" was assigned a value of 0. At grades three and four, "satisfactory" was assigned a value of 2, "needs improvement" was assigned a value of 1, and "unsatisfactory" was assigned a value of 0. (See Appendix for copies of the report cards used at each level.)

Voluntary reading. This was student selected reading which was not assigned by a teacher and which a student read either in school or at home.

Library book circulation. This was a measure of voluntary reading based on the total number of books a student checked out from the school library during the 1989-90 school year (fourth grade) and during the fall of the 1990-91 school year (fifth grade) as recorded by the school's computerized library circulation system.

Participation in Recreational Reading. This was a measure of voluntary reading based on a building wide program to encourage students to read in their free time at school and at home by means of intrinsic and extrinsic motivation. The index of participation in recreational reading for the 1989-90 school year (fourth grade) was based on the number of 300 page units the student reported having read. During the fall of the 1990-91 school year (fifth grade), the index was based on the number of months (0 - 3) the student reached the minimum 250 page goal.

Chapter 1 participation. Chapter 1 participation was defined three different ways in this study. First, Chapter 1 participation was defined as the total number of years a student was served by Chapter 1. Second, Chapter 1 participation was defined as a binomial (yes-no) variable on the basis of whether or not the student had ever received Chapter 1 service. Third, Chapter 1 participation was blocked into three subgroups: (a) no participation in Chapter 1, (b) participation only in the primary grades (one or two), and (c) participation in the intermediate grades (three, four, or five). The majority of students in the intermediate group also received Chapter 1 services in the primary grades. The purpose of this blocking was to analyze the sustaining effects of Chapter 1 service on students who participated only in grades one or two and who did not in grades three, four, or five. The primary group was the central focus of this sustaining effects study.

Research Questions

The following research questions were addressed in this study:

1. What is the pattern of participation in the Chapter 1 program on a longitudinal basis from grade-to-grade?
2. How do sex, socioeconomic status, or family status affect participation in the Chapter 1 program?
3. How do sex, socioeconomic status, or family status affect participation in the Chapter 1 program when students are blocked into groups on the basis of (a) participation only in the primary grades or (b) participation in the intermediate grades?

4 . How do sex, socioeconomic status, or family status affect total years of participation in the Chapter 1 program when students are blocked into groups on the basis of (a) participation only in the primary grades or (b) participation in the intermediate grades?

5. What are the relationships between eligibility for participation in the Chapter 1 program and sex, socioeconomic status, and family status?

6. What is the pattern of participation in the Chapter 1 program on the basis of eligibility for service from grade-to-grade?

7. To what extent is mobility a factor in participation in the Chapter 1 program?

8. What is the relationship between participation in the Chapter 1 program and intelligence as measured by standardized IQ tests?

9. What is the relationship between participation in the Chapter 1 program and receipt of special education services?

10. What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of attendance in grades Kindergarten through four?

11. What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of reading proficiency using standardized reading test scores in grades three, four, and five?

12. What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of reading proficiency as based on placement in regular education reading groups?

13. What is the relationship between Chapter 1 participation and the outcome measure of voluntary reading as based on participation

in a recreational reading motivation program and library book circulation?

14. What is the relationship between Chapter 1 participation and the outcome measure of attitude towards reading?

15. What are the sustaining effects of Chapter 1 participation in the primary grades on success in the regular program as measured on the outcome of grade point average in social studies and science at grades three and four?

16. What are the sustaining effects of Chapter 1 participation in the primary grades on success in the regular program as measured on the outcome of work habits and attitudes as rated by teachers on student report cards?

CHAPTER II

REVIEW OF LITERATURE

Introduction

Chapter 1 regulations require an annual report to the state education agency (SEA) of the treatment effect of Chapter 1 upon students in each local education agency (LEA). In Iowa, the pretest and posttest raw scores of students on approved standardized reading tests are submitted to the Iowa Department of Education where the scores are analyzed and the local program's success is computed in terms of normal curve equivalent (NCE) gains (or losses). By following the procedures recommended by the Iowa Department of Education, the Chapter 1 program of the Maquoketa Community Schools meets this minimal level of Chapter 1 evaluation requirements. Although the district enrolls 1600 students, of whom about 180 are served by the Chapter 1 program, no further evaluation of the Chapter 1 program has been attempted.

Desmond (1988) analyzed the evaluation procedures of Chapter 1 programs to determine which data are collected and the degree to which evaluation led to program improvement. She found that evaluations conducted by districts serving fewer than 500 Chapter 1 students were less likely to provide information which would contribute to program improvement. The rural and small districts in her study were less likely to use external evaluators, less likely to budget for evaluation purposes, less likely to collect information from regular classroom teachers, less likely to use relevant research reports to establish evaluation criteria, less likely to gather information data related to program goals and objectives, less likely to gather evaluation on staff development activities, less likely to monitor student progress, and less likely to use program improvement as a reason for Chapter 1 evaluation activities.

Goals and Procedures for Chapter 1 Program Evaluation

Chapter 1 is a federal funding program intended to help meet the educational needs of children in schools with high numbers of children from low-income families. As Calfee (1986) states, "The single most important dimension of psychological, social, and educational diversity among human beings is probably marked by the distribution of wealth, and the power that wealth represents" (p. IV-35). At the time of the inception of Chapter 1 in the 1960s, he notes, society was wrestling with the issue of equality of opportunity in terms of school inputs versus the equality of excellence in terms of student outcomes. As a form of compensatory education, Chapter 1 is based on a model in which additional resources are targeted to students to "compensate" for some "deficit" inherent in the student. Within this context, the evaluation procedures of a district should assess the degree to which the Chapter 1 program closes the educational achievement gap between the economically disadvantaged and other students.

Chapter 1 regulations call for each LEA to evaluate the impact of its program on the achievement of participating children (Department of Education, 1989). In terms of program outcomes, Chapter 1 targets improved achievement of educationally deprived children in their regular classroom performance. Educationally deprived children are defined as "children whose educational attainment is below the level that is appropriate for children of their age" (Department of Education, 1989, p. 21758).

More specifically, the Chapter 1 regulations call for educationally deprived children to "succeed in the regular educational program of the LEA" (Department of Education, 1989,

p. 21758) by attaining grade-level proficiency and improving achievement in basic and advanced skills. LEAs may also evaluate a Chapter 1 program in terms of desired outcomes such as student performance on criterion-referenced tests, dropout rates, attendance, retention rates, LEA developed outcomes, teacher judgments, grades, and other appropriate measures.

Further, once every three years, each LEA is to conduct a sustaining effects study to determine the extent to which Chapter 1 students sustain improved performance one calendar year after they no longer receive Chapter 1 services. In Iowa, the SEA currently recommends that this evaluation of sustaining effects be done using a spring-spring-spring testing cycle in which the first test administration is the pretest for Chapter 1 instruction, the second administration is the posttest of that instruction, and the third administration (one year after exiting the program) is for the purpose of measuring the sustaining effects of Chapter 1 participation. These are minimal requirements and LEAs are encouraged to conduct more extensive evaluations.

Demographic Variables of Students Who Receive Chapter 1 Remedial Reading Services and the Relationship of these Variables to Student Achievement

One of the core issues in Chapter 1 evaluation involves the selection of students to receive services. Demographic descriptions of students served by Chapter 1 abound in the literature because, by definition, Chapter 1 is to serve the disadvantaged students in greatest need. As expected, there is to be no discrimination in selection for Chapter 1 participation on such variables as sex, race, or ethnic background. The demographic variables discussed in this review of the literature were included because of their perceived contribution to the design of an evaluation system for the Chapter 1 program in the Maquoketa Community Schools.

Participation, achievement, and socioeconomic status. Calfee (1986) noted that one of the best predictors of early performance in school is the socioeconomic status (SES) of the family. Despite the efforts of Chapter 1, he observed that the correlation between socioeconomic status and reading achievement remains a basic reality in schools. Although many reports examined the demographic variables of race and ethnic group, few attempted to describe or evaluate the effect of Chapter 1 participation on achievement in terms of socioeconomic status.

The role of socioeconomic status in the selection of students to receive Chapter 1 service was one factor analyzed by Carter (1984). In describing Chapter 1 program participation, he addressed the question of how many economically poor students were served by Chapter 1. One of his findings was that only 40 percent of the economically poor students received compensatory education services. Surprisingly, of the students who were both poor and low achievers, only 40 percent received services. Further, he observed that there were significant numbers of students who received compensatory education who were non-poor, regular achievers. He concluded that this was because (a) school buildings are selected for funding on the basis of the percentage of low income students in the school but (b) students are selected for Chapter 1 participation in within the school on the basis of test scores and/or teacher judgment of need. Thus, a two step selection process determined which children received Chapter 1 services (a) based on the school the child attends and (b) the student's achievement ranking within that school.

Participation, achievement, and sex. The relationship between the variable of sex and selection for Chapter 1 service has also been analyzed. Pfannenstiel (1987) found more males participated in Chapter 1 programs, especially reading. Schrankel and DeGracie (1986) reported 56 percent of Chapter 1 participants were male and that the percent of males increased in junior high.

Of the reports reviewed, the only one which analyzed achievement gains in relationship to sex was prepared by Ashby, Levitt, Naya, and Wardell (1985) in their evaluation of the Chapter 1 program of Dade County, Florida. Female reading achievement gains were higher than male gains at both elementary and secondary levels, leading to the inference that females appeared to benefit more from Chapter 1 than males.

For Morrow and Weinstein (1986) sex was a significant variable in an experiment to stimulate student participation in voluntary reading activities. Girls not only chose literature more frequently than boys before the experimental intervention, they were more responsive to the intervention. When combined with the Ashby et al. (1985) report, this tends to suggest that the impact of Chapter 1 instruction is more evident for girls than boys.

Participation, achievement, and mobility. Halfar and Collins (1987) found mobility caused serious difficulties in evaluating Chapter 1 programs in New York City. Despite the use of a central computerized data file to track students and to gather data for their evaluation study, they were only able to acquire the three valid test scores needed (pretest, posttest, and sustaining effects test) for about 35 percent of the students who could have been included in their study.

Davidoff and Fishman (1988), who noted that student mobility has often been cited as a reason for poor performance, also addressed student mobility in their annual report of the Chapter 1 program in Philadelphia. Based on whether students were in different schools at different times during the school year when data were gathered, they devised an index of stability based on the proportion of pupils who did not change schools during the year, finding that students in Chapter 1 were nearly as stable (92 percent) as the district population at large (95 percent). This indicated that most Chapter 1 students received consistent service throughout the school year.

Mobility was not an issue for Yagi and Kushman (1988) because only students who remained in the building during three contiguous years were included in their longitudinal study. This was done to eliminate the effects of attendance at different schools and to provide more consistent data gathering and reporting procedures.

Participation, achievement, and ability (IQ). Although some reports discussed "ability," none examined ability as measured by IQ scores to describe Chapter 1 students. In addition, none used results from standardized IQ tests to analyze either patterns of Chapter 1 participation or achievement. It appeared "ability" in these studies was operationally defined as an index of performance on a student's pretest.

Participation, achievement, and placement in special education programs. Many students receiving Chapter 1 services eventually receive services in special education programs. Amorose, Brown, Duffy, Morgan, and Thompson (1987) found that 11 percent of Chapter 1 students were later served by special education programs. May and Farha (1989) reported Chapter 1 prekindergarten students were placed in LD and BD classrooms at a rate higher than that of the general student population. Although Bellew (1987) was unable to find a difference between Chapter 1 and non-Chapter 1 students in terms of participation in special education programs, Kirshstein (1987) reported statistics on Chapter 1 student participation in specific special education programs such as Learning Disabilities and Speech and Language.

Participation, achievement, and retention. Retention, as it relates to Chapter 1 participation and achievement, was examined by some evaluators. In a study of the Sault Sainte Marie, Michigan, Chapter 1 program, Malmberg, Malmberg and Ratwik (1983) noted that 56 percent of the students served in 1981-82 had been retained at least one year during their elementary career. They also ascertained that 43 percent of the students who had been retained were served in the district's transition program between Kindergarten and first grade. Others found retention rates were highest in grade 1 (May & Farha, 1989) and significantly higher retention rates for students who had participated in the Chapter 1 program (Bellew, 1987).

Total years of participation in Chapter 1 and achievement. It was observed that descriptions of the length of participation in Chapter 1 and patterns of participation were a major focus of many Chapter 1 program evaluation reports. Allington (1984) argued that an indicator of a successful Chapter 1 program is the number of students who, after dismissal from remedial service, no longer need service.

Although the underlying question is how much Chapter 1 participation is necessary before a student no longer needs service, most studies merely report the average number of years of Chapter 1 participation. Mean number of years of Chapter 1 participation were variously reported: 2.24 (Bellew, 1987), 1.99 (Amorose et al., 1987), 1.4 (Schrankel & DeGracie, 1986), and 1.5 (May & Farha, 1989). In addition, Schrankel and DeGracie (1986) found that 71 percent of students received only one year of

Chapter 1 service, 20 percent participated for two years, 7 percent for three years, and only 2 percent were in Chapter 1 for four years. Kirshstein (1987) reported 48 percent of students in a Kindergarten cohort and 33 percent of students in a grade one cohort received only one year of Chapter 1 service while 25 percent of the students in both groups participated for two years. Thus, one year of service appears to be the norm.

Carter (1984) offered an explanation for why one year was the usual number of years of Chapter 1 participation. He found that students who received only one year of service were typically those whose reading achievement scores were slightly below average (standard scores between 90 and 100) at the beginning of the school year. By the end of the year, their achievement had improved such that they were "promoted out." Students receiving more than one year had lower pretest scores at the beginning of the school year and showed less gain during the year.

Participation by age or grade level and achievement. While total years of Chapter 1 participation was the one factor most commonly studied, patterns of Chapter 1 participation were also examined. May and Farha (1989) report grades 3 and 4 were the most common grades for Chapter 1 reading participation. Pfannenstiel (1987) found Chapter 1 participation in alternating years was very common with less than one-third receiving services in contiguous years. In a longitudinal study, Kirshstein (1987) noted that 48 percent of a group of first grade students received service only in grades one and/or two. Schrankel and DeGracie (1986) found a similar tendency to direct Chapter 1 services to the lower grades.

Patterns of participation, achievement, and sustaining effects. Many of the evaluators examined the impact of various patterns of Chapter 1 participation on achievement as measured by standardized test scores in reading. As did Kirshstein (1987), Bellew (1987) used a permutation pattern to identify the possible Chapter 1 participation patterns by grade level. For example, the pattern 11000 would indicate a student received continuous Chapter 1 service in grades one and two but did not receive service in succeeding years. A pattern of 10101 would indicate a student received service in grades one, three, and five.

Carter (1984) found considerable turnover among the students receiving compensatory education services such that about 40 percent of students in Chapter 1 in one year did not receive service the following year. Of those who did not receive a subsequent year of Chapter 1 service, 60 percent were promoted out, 15 percent were in grades which did not receive services, and 25 percent were in schools which no longer received Chapter 1 funds.

Bellew's (1987) data revealed that the lowest achieving students remained in Chapter 1 the longest while the best students made the greatest gains in only one year and were promoted out. In addition, it was found that students who made the greatest gains while in the program, continued to make gains after exiting, mostly during the first year out of the program. However, most of the former Chapter 1 students only made gains that were comparable to similar students who had not received Chapter 1 services and they were unable to "close the achievement gap." Because some students who had been promoted out of Chapter 1 later returned to the program, the recommendation was made that evaluation of student achievement be analyzed not only in terms of total years of Chapter 1 participation in the program but also on the basis of patterns of continuous versus interrupted participation.

At first glance, some of the data could tempt one to conclude that the more Chapter 1 service a student receives, the less the student achieves. Pfannenstiel (1987) reports a perfect inverse rank ordering between years of compensatory education and achievement which shows decreasing levels of achievement with each additional year of Chapter 1 participation. A similar pattern was noted by Amorose et al. (1987) who found that students receiving three and/or four years of Chapter 1 service did not sustain their achievement levels (as measured by standardized reading tests) one year after exiting. In addition, Schrankel and DeGracie (1986) found a decline in NCE scores with longer periods of service and that the Chapter 1 related gains were not sustained after exit. Similar findings were reported by Culyer (1984) who found evidence that students who received service scored no higher on achievement tests administered years later than students who had been eligible but did not receive services. He concluded by noting that the long-term effects of Chapter 1 reading instruction were minimal or non-existent.

Carter (1984) offered an explanation for lack of sustaining effects with increasing years of Chapter 1 participation by observing that the least able students receive the most service. These are the students least likely to improve as a result of academic instruction. One of his major conclusions was that Chapter 1 was effective for moderately disadvantaged students, but Chapter 1 participation did not appear to improve the relative achievement of the severely disadvantaged.

In contrast to the many negative findings described above, Claus and Girrbach (1982) reported a positive correlation between achievement and continuous time spent in Chapter 1. Students whose participation in Chapter 1 was interrupted showed a loss of 4 NCEs in reading. Claus and Quimper (1987) confirmed this by comparing the achievement gains of students who had received Chapter 1 service for one year, several continuous years, and several interrupted years. They hypothesized that the decline noted by students with an interrupted pattern of Chapter 1 participation was due to a failure to internalize learnings and/or unreliably high scores causing premature dismissal from the program.

Achievement and Sustaining Effects as Measured by Standardized Reading Tests

As has been seen above and will be shown below, the universal outcome measure of the effects of Chapter 1 participation is gain scores on standardized reading tests. Following a discussion of this practice, other outcome measures or variables of the impact of Chapter 1 will be discussed.

Desmond (1988) begins her discussion of this issue by stating, "The measurement of effectiveness of compensatory programs has in almost every case involved scores on ability and achievement tests taken by participating children" (p. 17). It appears this is due to Chapter 1 regulations which require LEAs to evaluate student achievement in reading as measured by the "'comprehension' or equivalent score of a nationally normed reading test" (Department of Education, 1989, p. 21773).

In this model, districts are to evaluate the effect of Chapter 1 participation by comparing achievement after receipt of Chapter 1 service with an estimate of achievement had that service not been provided. One recommended procedure for this is to administer a pretest of reading achievement in the spring prior to receipt of Chapter 1 service and a posttest in the spring of the year of Chapter 1 service. By using standardized reading tests, the student's ranking within the norming group at the time of the pretest can be compared with the student's ranking on the posttest. Because ranking measures are on the ordinal scale of measurement and cannot be added or subtracted, these rankings are converted to an equal interval scale termed the normal curve equivalent (NCE). With NCEs it is possible to add or subtract and to compute differences and averages. The basic assumption in this model is the estimate that a low achieving student who does not receive Chapter 1 service will demonstrate either no gain or a loss in NCE units (that is the student's ranking compared to the norming group will remain the same or decrease). However, with low achieving students who participate in Chapter 1, all gains in NCEs are defined as the benefit, impact, or "treatment effect" of Chapter 1 service.

The NCE gains or losses for each student participating in a Chapter 1 program can be aggregated to estimate grade level, building, and district treatment effects. Should a district or building Chapter 1 program fail to show an NCE gain, Chapter 1 regulations call for the design and implementation of a "school program improvement plan" (Department of Education, 1989, p. 21766).

In addition to an annual evaluation, at least once every three years an LEA shall "collect additional information to determine whether student achievement gains are sustained over a period of more than 12 months" (Department of Education, 1989, p. 21774). Several of the studies in this review of the literature were undertaken specifically to meet this requirement. Although other outcome measures can be used, performance on standardized tests with national norms is the standard practice. Despite the requirement to conduct a sustaining effects study at the local level, it appears districts are not required to report the results of these studies to the SEA.

In a sustaining effects study reported to the Philadelphia Board of Education, Davidoff (1988) found that students who received Chapter 1 reading services for one year failed to show sustained gain after no longer receiving services. Equivalent results were found by Brown (1987) who noted that despite a gain of 5.3 NCEs for first graders while receiving service, only about 38 percent of these students were able to maintain or exceed their pretest level on the sustaining effects testing.

Of the authors reviewed, only Calfee (1986) attacks the use of standardized reading tests as the only measure for a Chapter 1 program. In his review of effective schools research, he criticized the studies which relied on multiple choice tests as the primary measure of "effectiveness." Such reliance on standardized tests was questioned because it reduces literacy to that which is measured on standardized reading tests.

But the impact of using standardized reading tests to evaluate Chapter 1 effectiveness may be more than questionable, it may be counterproductive to the larger goal of success in the regular program. As Doyle (1986) argued, the instructional emphasis on mastery of small steps in content may prepare students for success on standardized tests, while failing to help them succeed in regular classes. Thus, it becomes necessary to examine measures or indicators which are based on outcomes of the regular educational program of the district to more accurately evaluate the impact of Chapter 1 service on students.

Achievement and Sustaining Effects of Chapter 1 Participation as Measured Using Regular Educational Program Outcomes

Chapter 1 impact on attendance (Days Absent). Improved attendance is mentioned as one of the indicators of success of a

Chapter 1 program which an LEA may establish as one of its desired outcomes (Department of Education, 1989). This goal of improved attendance is based on the assumption that poor attendance is a characteristic of Chapter 1 students, an assumption not confirmed by the literature. Sevigny (1987) used the record of days absent as noted on student report cards as an index of attendance at the Kindergarten and first grade levels. While there was no difference between Chapter 1 and non-Chapter 1 students in terms of attendance, she noted that students whose absences exceeded 30 per year were significantly more likely to be retained at first grade. Bellew (1987) also compared Chapter 1 participants with non-participants noting that attendance for participants was less than non-participants, but not at a level of statistical significance. These reports, which indicate there was no difference in attendance due to Chapter 1 participation, fail to demonstrate that the outcome of improved attendance is related to Chapter 1 participation.

Chapter 1 impact on reading level/group placement. In his review of the history of Title I/Chapter 1, Smith (1989) noted that grouping and tracking are common practices in American schools and that low-income children tend to be concentrated in the lower-achievement groups. The use of pullout programs in Chapter 1 also tends to concentrate low achieving students into lower leveled instructional groups in the regular program.

Winfield (1984) was the only researcher located who analyzed instructional level/group placement in relationship to participation in the Chapter 1 program. She used the teacher administered end-of-unit testing to determine student instructional level at the end of each year. Descriptive data showed that over the two-year period under examination, Chapter 1 participants declined from a placement 1/2 year below grade level at grade 3 to a placement 1/2 to 2 years below grade level at grade 5. Because they are placed in instructional groups which use below grade level materials, these students are not exposed to grade level appropriate content and skill instruction. She concluded that placement in these lower instructional groups had a significant impact on a student's standardized test scores, teacher grades in reading, and selection for participation in Chapter 1.

Chapter 1 impact on voluntary reading. Although formulations of goals for reading programs usually contain a statement to the effect that students will enjoy reading and will voluntarily select and read books for recreational purposes, it is believed that few schools make a formal attempt to assess student progress on this goal. One indication of how little children's voluntary reading has been researched is indicated by the fact that only one study of this topic was located. Morrow and Weinstein (1986) found substantial numbers of children do not choose to read either for pleasure or for information. They suggest that one factor may be the school's emphasis on skills with little opportunity for students to read for enjoyment. Further, they recommend a conscious effort to increase student voluntary reading by means of classroom library centers and formal literature activities. Among the measures of success in this area, they suggest the level of voluntary reading at home as reported by students.

Chapter 1 impact on student attitudes towards reading. A positive attitude towards reading is an important program outcome in the area of reading. Smith (1989) observed that cross-sectional studies of children's attitudes towards reading show a general decline beginning in the primary grades and continuing throughout the time the child is in school. This may be due to a shift from an emphasis on "learning to read" to "reading to learn" in the content areas. As children progress in school, reading tasks become increasingly more demanding and complex, requiring the active linking of prior knowledge to gain meaning from the text. Students lacking in background knowledge or the ability to use it to comprehend the text will find the reading to be very frustrating. This may account for the general decline in positive feelings about reading noted by Smith. Unexpectedly, one of the findings of his study was a slight increase in student attitude towards reading in the high school years. This he attributed to the increased freedom students had to choose their own reading materials.

In contrast to longitudinal studies of attitude toward reading which compare different groups of students at different ages, McKenna and Kear (1990) developed an instrument to measure student attitudes towards reading which could be used to measure both individual student and group attitudes towards reading throughout the year. It uses four different poses of the comic strip character Garfield with which students can indicate their attitudes towards 20 aspects of reading which are divided into two groups: attitudes towards recreational reading and attitudes towards academic reading. Although norms provided with the test are midyear, McKenna and Kear recommend teachers administer the test in the fall and again in the spring to assess class changes during the year. No uses of this test to evaluate the effects of Chapter 1 participation were located in the literature.

Chapter 1 impact on student grades. A major outcome of the Chapter 1 program is student success in the regular program. Certainly one measure of success in the regular program is passing grades, but not just in reading. Although all studies used scores on standardized reading tests as the dependent variable for achievement, only Sevigny (1987), Winfield (1984), and Kirshstein (1987), studied report card grades of Chapter 1 students. Sevigny (1987) found that, by the end of grade 1, there was no difference in grades between students in an Extended Day Kindergarten (EDK) program funded by Chapter 1 and a matched group of non-EDK students. However, by the end of second grade, the EDK students received significantly higher grades in language arts and mathematics. In Winfield's (1984) study, analysis of covariance was used to pilot test an evaluation model which used letter grades in reading as one of several predictor variables for fifth grade achievement. She found grade three letter grades in reading had a small but significant ability to predict fifth grade achievement, even after controlling for instructional level, achievement, and group membership. This confirmed the common wisdom that report card grades predict little except future report card grades. Perhaps Kirshstein (1987) had the final word when she observed that elementary report cards indicate very little unless the student is performing either extremely poorly or extremely well.

Chapter 1 impact on teacher judgments of student work habits and attitudes. Although success in the regular program is a desired outcome of the Chapter 1 program, few studies directly addressed the variable of mastery of appropriate student behaviors as a function of success in the regular program. Yagi and Kushman (1988) made several interesting observations about student behavior and achievement among which were: (a) teachers vary in the amount of negative behavior they tolerate, (b) some students will exhibit more negative behavior than others and it will persist unless extinguished, (c) students with negative behaviors will obtain lower basic skills test scores and are more likely to be enrolled in Chapter 1, (d) when students are enrolled in

Chapter 1, their behaviors will improve, (e) student differences in basic intellectual ability are minor when compared to the influence of behavior on mastery of curriculum outcomes, and (f) the key feature of "pull-out" Chapter 1 instruction is individual attention which tends to keep students engaged in positive behaviors during short instructional time periods. They concluded that a casual relationship exists between achievement and appropriate social and educational behavior.

Summary

A federal funding program, Chapter 1 regulations outline procedures for an annual evaluation in which student pretest and posttest scores are compared to estimate the effect of Chapter 1 participation. In addition, each district is to conduct a sustaining effects study once every three years to assess the degree to which students are successful in the regular program once they no longer receive Chapter 1 service.

This review of the literature was undertaken to ascertain various ways in which Chapter 1 evaluators had responded to these requirements, to identify evaluation variables and methods which were relevant to the design of this study, and to provide a background necessary to conduct a sustaining effects study of a Chapter 1 program at the building level.

It was found that many of the Chapter 1 evaluation reports focused upon descriptions of Chapter 1 participants using such demographic characteristics as socioeconomic status, sex, mobility, placement in special education programs, total years of participation, and grade levels(s) of participation. The use of standardized reading tests, although questioned by some authors, was the dominant measure of Chapter 1 program effectiveness throughout the literature. Only a few studies used measures of other regular education program outcomes such as attendance, reading group placement, voluntary reading behaviors, attitudes towards reading, report card grades, and teacher judgments of work habits and attitudes.

Further, in the studies reviewed, it was evident that it was difficult to demonstrate significant benefit from Chapter 1 participation using measures of regular education outcomes.

CHAPTER III

RESEARCH METHOD

Introduction

Although this study was undertaken to evaluate the sustaining effects of participation in the Chapter 1 remedial reading program, it also served to provide the experience necessary for development of a district wide Chapter 1 program evaluation model. Because a pilot test of data gathering and statistical procedures was an integral purpose of this study, it was appropriate to limit this study to 52 fifth grade students enrolled at Briggs Elementary School.

As a descriptive study, this was the first attempt in the district to systematically gather and analyze student performance data of Chapter 1 students other than that required for submission to Chapter 1 officials at the state level. Further, this study endeavored to meet the requirements for evaluation of sustaining effects of Chapter 1 participation on students called for in Chapter 1 regulations.

Research Design

The causal-comparative research method was used to identify possible factors influencing student success in the instructional program by analyzing student performance on selected outcome measures on the basis of age, sex, socioeconomic status, family status, and degree of participation in Chapter 1 remedial reading. Again, in keeping with the exploratory nature of this study, this was undertaken to explore possible causal relationships, not to confirm them.

Finally, correlation coefficients were used to discover or clarify relationships between many variables using a "shotgun" approach and to help identify which variables could be included in a district wide evaluation system.

Description of the Sample

Description of the setting. Briggs Elementary School serves 440 students in grades K - 5 in Maquoketa, Iowa (population 6,000) and surrounding rural area in Jackson County. During the 1980s, this area experienced economic distress with unemployment as high at 11 percent and related population decline. At Briggs the measure of socioeconomic status, participation in the free/reduced lunch program, doubled during the decade from 15 percent to its current level of 35 percent. Built in 1954, Briggs contains traditional four-walled classrooms in which teachers stress mastery of skills and content, the values of a work ethic, and proper classroom behavior.

Description of the regular reading program. During the time the students in this cohort were enrolled at Briggs, teachers used the Macmillan reading program which provided instructional materials in levels of difficulty such that an average student should have completed level 10 at the end of first grade, level 14 at the end of second grade, level 18 at the end of third grade, and level 24 at the end of fourth grade. Students were tested at the end of each level for mastery of discrete decoding and comprehension skills. Test results were scored with a computer and a print-out was given to the parents. Although first grade classes were self-contained, within each homeroom students were placed in three groups for reading instruction. In grades two through four, students were grouped into six or seven groups for reading within each grade level and switched between rooms for reading instruction where each teacher taught two reading groups.

In some cases, students in the Chapter 1 or Learning Disabilities programs received classroom instruction with the Scott Foresman Focus reading program rather than the Macmillan program. This permitted low achieving students to use the same reading program in both the regular classroom and remedial settings.

Description of the voluntary reading program. Beginning in the 1988-89 school year (when the students in this cohort were in second grade), the building implemented a recreational reading program which featured extrinsic rewards for out-of-school reading. Students were challenged to read at least 2400 pages during the academic year. For every 300 pages of reported reading, they received an extrinsic reward such as a pencil or book mark and their individual progress towards this goal was charted on a 30 foot wide bulletin board in the hallway outside the library.

This program was changed when this group entered fifth grade. Rather than reporting reading in an unlimited number of 300 page units during the year, students were challenged to read 250 pages each month for the purpose of receiving an extrinsic reward and to read beyond that for purely intrinsic reasons. The 30 foot bulletin board was used to display the names of students who had reached their goal each month.

The use of a computerized library circulation system not only increased the efficiency of the library staff, but it made it possible to gather student data in the form of the number of books circulated during a given time period. These data are reported to teachers at the end of each quarter and to the principal at the end of the year.

Description of the Chapter 1 program. Students were selected for Chapter 1 service on the basis of screening tests which were administered to all students in the year prior to actual participation as part of the district testing program. Kindergarten students took the Metropolitan Readiness Tests and those scoring below the 60th percentile rank were eligible for Chapter 1 service in first grade. While in grades one and two, students took the Gates-MacGinitie Reading Tests each April, but in grades three through five the Iowa Tests of Basic Skills was administered during the last week of September. Those scoring below the 40th percentile rank were considered eligible for Chapter 1 services.

However, to determine those with greatest need, students in each grade were ranked on the basis of these screening scores with the lowest scoring students placed at the top of the eligibility list. Students were placed in the Chapter 1 program in the order of their ranking on this eligibility list during a meeting of regular education and Chapter 1 teachers. As the teachers went down the list, each student's need for service was considered. Reasons for non-placement in Chapter 1 included successful progress in the regular reading program as demonstrated by criterion mastery tests or the student received service in a special education program such as Learning Disabilities. In some cases students with unexpectedly high screening test scores were placed in Chapter 1 using the "grandfather clause." Thus, some students who had benefitted from Chapter 1 service continued to receive Chapter 1 service because the teachers determined that dismissal from the program would have a negative impact on the student's academic growth. Because there were limits on the total number of students who could be served in the Chapter 1 program, students in the primary grades were given priority over those in the intermediate grades. Finally, before school dismissed for the summer, parents were notified of the results of these placement decisions.

Chapter 1 students were pulled-out of class for supplemental and remedial reading instruction which was provided by teachers who possessed a teacher certificate with a reading instruction endorsement. Chapter 1 lessons usually lasted 25 - 30 minutes and students were taught in small groups. There was no formal scheduled time for Chapter 1 and regular classroom teachers to meet for the purpose of coordinating their instruction on a daily basis. Nevertheless, because they had access to teacher manuals and student texts used in the regular reading program and because they keep pace with the regular program, Chapter 1 teachers were able to use materials and stress learning objectives which supplemented the outcomes taught in the regular reading program.

Demographic descriptors of the students. Subjects in this study were students enrolled in fifth grade at Briggs Elementary School in Maquoketa, Iowa during the 1990-91 school year. Enrollment for this study was counted at the time the Iowa Tests of Basic Skills was administered during the last week of September 1990. Because one objective of this study was a longitudinal analysis of regular program student outcomes, only students who had been continuously enrolled in grades three, four, and five were included. Of a potential 62 students, 52 met this enrollment requirement and were included in the statistical analyses reported.

Selected demographic characteristics of the sample as reported in Table 1 include the facts that there were more males (33) than females (19), 40 students came from traditional two-parent families while 12 lived in non-traditional families, and 12 children (23 percent) received free or reduced price lunch in September of their fifth grade. Of the 52 total students in the sample, 19 had received Chapter 1 service at least one year.

Table 1

Demographic Characteristics of the Sample

Characteristic	Number	Percent
Total students in sample	52	100.0
Male	33	63.5
Female	19	36.5
Low income (free/reduced lunch)	12	23.1
Traditional family	40	76.9
Non-traditional family	12	23.1
Served by Chapter 1 at least one year	19	36.5
Served by Chapter 1 only in grades 1 or 2	8	15.4
Served by Chapter 1 in grades 3, 4 or 5	11	21.2
Served by Speech/Language program	11	21.2
Served by Learning Disabilities program	3	5.8
Retained at least once	12	23.0
Enrolled at Briggs in grades 1 through 5	44	84.6

In addition 12 students had been retained, 9 of which had been enrolled in a special transition class between Kindergarten and first grade.

Implementation of the Research Plan

Data gathering. It was the intent of this study to unobtrusively analyze data which were routinely gathered by classroom teachers and stored in student cumulative files. A second source of data was the records kept by the school librarian.

As a pilot study, one purpose was to test the procedures for data gathering and analysis to determine their efficiency for a district wide study. First, a data gathering form was created on which to record data from each student as each cumulative file was reviewed. Designed in the shape of a computer spreadsheet, it proved cumbersome in practice and was subsequently divided into smaller sections. Second, data was entered in a computer data base program, DB Master (a relational data base program for Apple II computers), which not only had the capacity for up to 200 variables for each student but also the ability to access data from related files. This ability to link data bases on the basis of a common feature such as student identification number would permit the aggregation of data entered in different buildings for different purposes for use in a Chapter 1 sustaining effects study. However, this complexity also required devoting a great deal of time to master its features and would require special training for teachers and secretaries before it could be used in the district. Ultimately, DB Master proved impractical for use in this pilot study, and the decision was made to use AppleWorks.

Data processing. Data was initially entered in computer files using DB Master, a data base program. When this proved slow and inefficient, data was entered in a set of AppleWorks data base files which proved quicker and simpler to use. However, AppleWorks data base files were limited to 30 variables and it was necessary to create several such files. These files were then merged into one AppleWorks spreadsheet file. Use of the AppleWorks spreadsheet file made it possible to quickly arrange data for transfer to ASCII text files for use with the statistical program. It should be noted that the AppleWorks spreadsheet file was very close to the maximum capacity of an Apple IIGS with 1.2 megabytes of random access memory. Therefore, it would be impractical to use AppleWorks for a district wide evaluation system based on the variables used in this pilot study.

A statistical program, App-Stat, was used to compute Chi-squares, coefficients of correlation, analysis of variance, and crosstabulations. The App-Stat version for Apple II computers was limited to 1,500 data cells in one file and accepted only numeric variables. Thus, for the 52 students in this study, only 28 variables could be examined in at one time, and it was necessary to create many subfiles to complete the study. As with DB Master, this program was complex and required a great deal of time to learn. Further, App-Stat's limited capacity makes it inadequate for a district evaluation system.

Description of Variables

Because this was designed as a pilot study, it was envisioned that many variables would be explored in search of relationships which might be used in a district wide Chapter 1 evaluation system.

Total years of Chapter 1 participation. This was a measure of student Chapter 1 participation based on the total number of years a student received Chapter 1 service. The range of this variable was from 0 (never in Chapter 1) to 5, the maximum number of years a student could have received Chapter 1 service at Briggs.

Ever served by Chapter 1. Since the number of students who had received Chapter 1 service in the sample was small, only 19 in all, this variable was necessary to provide a large enough subgroup for certain statistical tests. This was a simple binomial yes-no variable.

Chapter 1 code. The conceptualization for this variable emerged during the exploratory phase of data review when it became evident that there was a need to identify a group with sufficient numbers which could be studied for sustaining effects using analysis of variance. Total years of participation in Chapter 1 was inadequate because there were too few students in each subgroup and using the binomial variable of participation in Chapter 1 did not adequately identify students for whom sustaining effects could be examined.

Chapter 1 code blocked students into three groups on the basis of their participation in Chapter 1. One group consisted of students who never received Chapter 1 service. The other two groups were divided according to whether or not the student had received Chapter 1 service only in the primary grades (grades one and two), and/or received service in the intermediate grades (grades three, four, and five). These three groups were designated as the "no Chapter 1 group," "the primary group," and the "intermediate group."

Chapter 1 code was a nominal scale variable which had three codes: 0 for students never served by Chapter 1, 1 for those served only in primary grades, and 2 for students served in the intermediate grades.

Age. Age was expressed in months at the time the student took the Iowa Tests of Basic Skills in September 1990.

Sex. For use in the statistical program, a code of 0 was used for females and a code of 1 was used for males.

Socioeconomic status. Socioeconomic status was determined on the basis of participation in the federally funded free and reduced price lunch program at the time the Iowa Tests of Basic Skills was administered in September when the students were in fifth grade. Students not participating in this program were categorized as "high socioeconomic status" while those who did participate were termed "low socioeconomic status." Although it could be conceptualized that a difference might exist between students who received reduced price lunches and those who received free lunches, in this study it was necessary to group these students together because only one student received reduced price lunch.

Family code. Determination of family code was based on personal knowledge of the students and their families. Initial coding for this variable included eight hypothetical family status conditions. However, because of the limited numbers in the study, it was decided to block this variable into two groups. One group included students whose family was "traditional" in that the student lived with both parents in one household. The "non-traditional" group included students in single parent households, households in which a divorced parent had remarried, and "other" households.

Ever retained. This variable was based on whether or not a student had ever been retained. Students who were enrolled in the

Pre-First program, a transition program between Kindergarten and first grade, were included in the group labeled "retained."

Mobility code. As explained above, only students who had been enrolled in grades three, four, and five at Briggs were included in the sample. A binomial variable, mobility code identified students who had also been enrolled at Briggs during both grades one and two. Thus, students present at Briggs during grades one and two were assigned a value of 1 while students not present during both grades were assigned a value of 0.

IQ. IQ was measured using the Cognitive Abilities Tests (CAT) which was administered to students during the first week of September at grades three and again at grade five. The CAT provided three IQ scores: Verbal IQ, Quantitative IQ, and a Non-Verbal IQ. All three scores from each administration of the test were used in this study.

Attendance. Attendance was the total number of days absent during grades Kindergarten through four.

Reading achievement as measured by standardized tests. Several standardized tests were used to measure reading achievement. At the end of Kindergarten students were administered the Metropolitan Readiness Test. Students who scored at the 60th percentile rank or lower (national norms) were considered eligible for Chapter 1 services. In grades one and two the Gates-MacGinitie Reading Tests was administered in the spring. Students scoring at the 40th percentile rank or lower (national norms) were considered eligible for Chapter 1 services. During the last week of September, the Iowa Tests of Basic Skills was administered to students in grades three and five with a percentile rank of 40 or lower needed for eligibility for Chapter 1 service. In this study, standardized reading test scores and estimates of gain were reported using the both the GE and NCE metrics.

Reading achievement as measured by reading group placement. In the regular reading program of the building, students were grouped for instruction with group one the highest achievement group. At grade one, students were taught in self-contained classrooms each of which had three reading groups. In grades two through four students were divided into six or seven reading groups at each grade level. The most proficient readers were assigned to group one while less proficient readers were assigned to groups two through seven in decreasing levels of reading achievement.

Voluntary reading as indicated by library circulation records. Because the reading program places an emphasis on "learning to read for enjoyment," library circulation data during fourth grade were used in this study. This measure was the number of books a student circulated (checked-out) of the library during the school year. In addition, the number of books a student circulated during the first four months of the fifth grade school year was also used. This measure reports only library circulation and no assumption is made about whether or not the books checked-out were actually read.

Voluntary reading as measured by participation in recreational reading motivation programs. Data from the recreational reading motivation program used while the students were in fourth grade were reported in terms of "stations" on a progress chart. Each "station" represented 300 pages of reading as reported by the student. Data from the fifth grade reading motivation program were limited to the first three months of school. The data reported at fifth grade were the number of months the student reached the goal of reading 250 pages for that month.

Attitude towards reading. Reading attitude was measured using a test described by McKenna and Kear (1990). In this study both the recreational and academic reading attitude raw scores were used.

Success in the regular program as measured by social studies and science grade point averages. The grade point averages in social studies and science in grades three and four were used as measures of success in the regular program. Because letter grades in language arts and mathematics were adjusted on the basis of placement in various achievement groups, they were not used. Data from grades three and four were used because grades one and two did not use the traditional A-F grading scale.

Success in the regular program as measured by teacher judgment of work habits and attitudes. The teacher's judgment of work habits and attitudes was an index based upon the "work habits and attitudes" portion of the report card. Because the terminology was different for different grade levels, this index was defined for each grade level. At first grade, "satisfactory" was assigned a value of 3, "improving" was assigned a value of 2, and "needs improvement" was assigned a value of 1. At second grade, "satisfactory" was assigned a value of 1 and "needs improvement" was assigned a value of 0. At grades three and four, "satisfactory" was assigned a value of 2, "needs improvement" was assigned a value of 1, and "unsatisfactory" was assigned a value of 0. (See appendix for copies of report cards used at each grade level.)

Research Questions

The following research questions were addressed in this study:

1. What is the pattern of participation in the Chapter 1 program on a longitudinal basis from grade-to-grade?

2. How do sex, socioeconomic status, or family status affect participation in the Chapter 1 program?

3. How do sex, socioeconomic status, or family status affect participation in the Chapter 1 program when students are blocked into groups on the basis of (a) participation only in the primary grades or (b) participation in the intermediate grades?

4 . How do sex, socioeconomic status, or family status affect total years of participation in the Chapter 1 program when students are blocked into groups on the basis of (a) participation only in the primary grades or (b) participation in the intermediate grades?

5. What are the relationships between eligibility for participation in the Chapter 1 and sex, socioeconomic status, and family status?

6. What is the pattern of participation in the Chapter 1 program on the basis of eligibility for service from grade-to-grade?

7. To what extent is mobility a factor in participation in the Chapter 1 program?

8. What is the relationship between participation in the Chapter 1 program and intelligence as measured by standardized IQ tests?

9. What is the relationship between participation in the Chapter 1 program and receipt of special education services?

10. What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of attendance in grades Kindergarten through four?

11. What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of reading proficiency using standardized reading test scores in grades three, four, and five?

12. What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of reading proficiency as based on placement in regular education reading groups?

13. What is the relationship between Chapter 1 participation and the outcome measure of voluntary reading as based on participation in a recreational reading motivation program and library book circulation?

14. What is the relationship between Chapter 1 participation and the outcome measure of attitude towards reading?

15. What are the sustaining effects of Chapter 1 participation in the primary grades on success in the regular program as measured on the outcome of grade point average in social studies and science at grades three and four?

16. What are the sustaining effects of Chapter 1 participation in the primary grades on success in the regular program as measured on the outcome of work habits and attitudes as rated by teachers on student report cards?

CHAPTER IV

RESEARCH FINDINGS

This study was undertaken to evaluate the sustaining effects of participation in the Chapter 1 program on students using measures of regular education program outcomes. Further, it served as a pilot test of procedures which could be developed into a district wide Chapter 1 evaluation program.

Statistical Procedures

Because this was designed as a longitudinal study of the sustaining effects of participation in the Chapter 1 remedial reading program, only students who had been continuously enrolled during grades three, four, and five were included in the sample. Thus, of the 62 students enrolled in fifth grade when the Iowa Tests of Basic Skills was administered in September 1990, only 52 were included in this study.

Data were treated using App-Stat, a statistical package for the Apple II computer marketed by StatSoft of Tulsa, Oklahoma. The App-Stat correlation program used in this study computed Pearson's product moment correlation coefficient using pairwise deletion of missing data and provided the correlation coefficient with the appropriate degrees of freedom, the *t*-value associated with the correlation, and the significance of the respective *t*-value (*p*-value, one-sided test criterion). The crosstabulations program furnished the number of observations per cell, the percent of observations per cell, and the Chi-square value with appropriate degrees of freedom and significance (*p*-value). App-Stat was also used to compute analysis of variance, providing an analysis of variance table, tables of means and standard deviations for each cell, and tables of comparisons of means between cells with respective _t_-values, degrees of freedom, and _p_-values for both pooled and separate variance estimates. Because the number of students in the subgroups examined with analysis of variance were unequal, only the _p_-values for pooled variance estimates were reported.

Results of this study are presented in this order: A report of the various student demographic characteristics related to Chapter 1 participation is followed by an analysis of the data used to measure the sustaining effects of Chapter 1 participation. Discussion of these results will be presented in Chapter V of this study.

Results Which Describe the Characteristics of Students Receiving Chapter 1 Service

Patterns of participation in Chapter 1. Chapter 1 participation was first examined in terms of the patterns of participation on a grade-by-grade basis. A high rate of turnover among Chapter 1 participants, in which students received Chapter 1 service in alternating years, was not evident in this sample. Once dismissed from Chapter 1, no student subsequently received service again, thus none received service in alternating years.

Table 2 and Graph 1 presented Chapter 1 participation data by grade level. Rather than a pattern of rapid turnover, these data revealed a pattern of continuous service until the student was promoted or staffed out. Of the nineteen students ever served by Chapter 1, fourteen (74 percent) were served beginning in grade 1 and received uninterrupted service until staffed out. The remaining five students who did not receive Chapter 1 service in grade one included three who began in grade two, one in grade three, and one in grade four. Thus, seventeen of the nineteen

Chapter 1 participants (89 percent) received service in grades one or two. Six students (32 percent) received only one year of service.

Participation in Chapter 1 and selected demographic characteristics of students. Under this heading the questions of Chapter 1 participation and eligibility on the basis of student demographic characteristics of sex, socioeconomic status, and family status were explored.

Because the ultimate goal of the Chapter 1 program at the national level is to close the achievement gap of students whose achievement is low due to socioeconomic disadvantagement, examination of which students received Chapter 1 services has been a basic issue to address in program evaluation at the district level. Therefore, several statistical analyses were performed to determine if there were any demographic characteristics of students which influenced Chapter 1 participation in the program. Table 3 summarized many of these characteristics. Results of the Chi-square test revealed no statistically significant pattern of participation in Chapter 1 on the basis of sex, socioeconomic status (free/reduced price lunch), or family status (traditional vs. non-traditional family).

A look at each variable in more detail, as shown in Graph 2, revealed that on the basis of sex, participation was relatively well balanced with 39 percent of the boys and 32 percent of the girls ever having received Chapter 1 service. However, low socioeconomic status students were more likely to have received Chapter 1 service (50 percent) as compared to high socioeconomic students (33 percent). This pattern was repeated on the basis of family status with 33 percent of the students from traditional families having participated in contrast to the 50 percent of the students from non-traditional families. Thus, it appeared family

Table 2

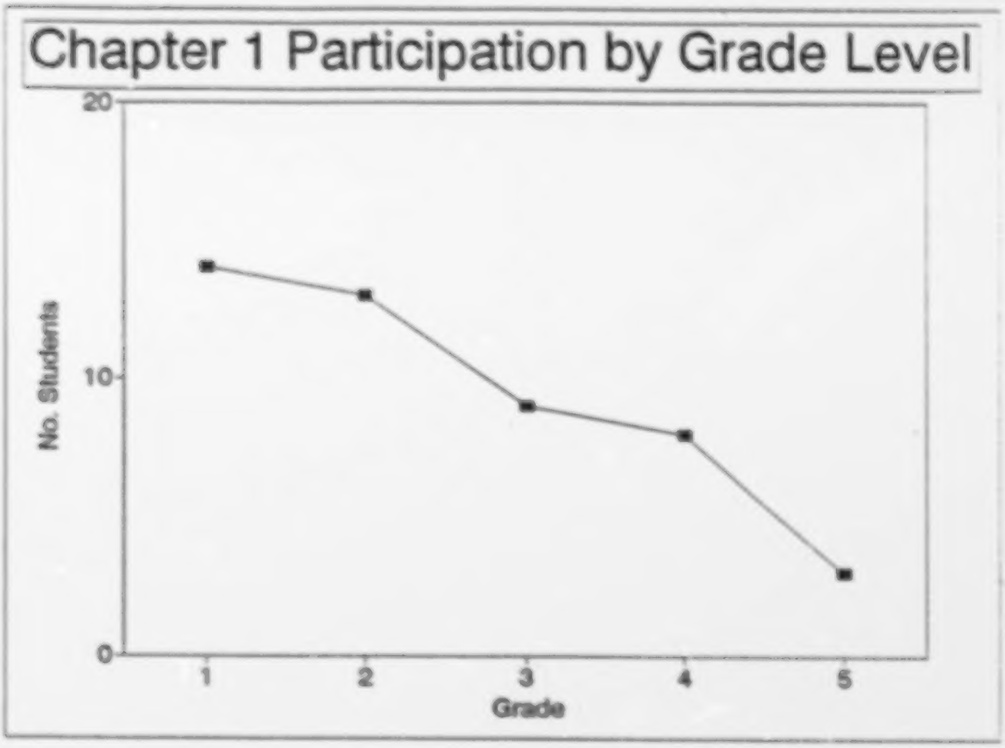
Patterns of Chapter 1 Participation by Grade Level

Grade Level of Chapter 1 Participation					Participants By Pattern	
1	2	3	4	5	Number	Percent
1	0	0	0	0	4*	8
1	1	0	0	0	4*	8
1	1	1	0	0	2**	4
1	1	1	1	0	1**	2
1	1	1	1	1	3**	6
0	1	0	0	0	1*	2
0	1	1	1	0	2**	4
0	0	1	1	0	1**	2
0	0	0	1	0	1**	2
0	0	0	0	0	33***	63
Total participants per grade level						
14	13	9	8	3		

Note. Percentages were based on the total number of students in the sample (52). A "1" indicates student participated at that grade level. Chapter 1 treatment groups: * = Primary, ** = Intermediate, *** = No Chapter 1.

Graph 1

Graph of Student Participation in Chapter 1 by Grade Level



status and socioeconomic status may have played a role in receipt of Chapter 1 services, although not at a level of statistical significance.

A further examination of Chapter 1 participants revealed that 68 percent were boys, 68 percent were from high socioeconomic status families, and 68 percent were members of traditional families.

While Table 3 distinguished between students who had received at least one year of Chapter 1 service from those who had received no service, Table 4 reported data which distinguished students who received Chapter 1 service only in grades one or two (the primary group) from those who participated in grades three, four, or five (the intermediate group). This was done because several research questions focused upon the effects of receipt of service only in the primary grades upon various measures of regular program outcomes. As was the case in Table 3, the Chi-square tests reported in Table 4 revealed no significant differences in Chapter 1 participation rates for these two groups on the basis of sex, socioeconomic status, or family status.

Nevertheless, the data showed that although participants were relatively well balanced between boys (50 percent) and girls (50 percent) in the primary only group, in the intermediate group more participants were boys (81 percent) than girls (19 percent). A change in the proportion of low socioeconomic status participants in the primary only group from 25 percent to 36 percent in the intermediate group was also noted. Despite the fact that different students were tallied, similar percentages were found when participation was compared on the basis of family status. The primary only group consisted of 25 percent non-traditional family status students while 36 percent of the

Table 3

Chi-square Comparisons of Chapter 1 Participants and Non-Participants on the Basis of Selected Demographic Characteristics

Characteristic	Participants	Non-Participants
Males	13 (39%) 25% [68%]	20 (61%) 38% [61%]
Females	6 (32%) 12% [32%]	13 (68%) 25% [39%]
Chi-square = .328	df = 1	p = .58
Low socioeconomic status	6 (50%) 12% [32%]	6 (50%) 12% [18%]
High socioeconomic status	13 (33%) 25% [68%]	27 (67%) 52% [82%]
Chi-square = 1.219	df = 1	p = .26
Traditional family	13 (33%) 25% [68%]	27 (67%) 52% [82%]
Non-Traditional family	6 (50%) 12% [32%]	6 (50%) 12% [18%]
Chi-square = 1.219	df = 1	p = .27

Note. Percentages in parentheses were row percents. Percentages in brackets were column percents within each section. Percentages below the raw numbers were based on the total number of students in the sample (52).

Graph 2

Graph of Chapter 1 Participation on the Basis of Sex, Socioeconomic Status (High vs. Low) , and Family Status (Traditional vs. Non-Traditional)

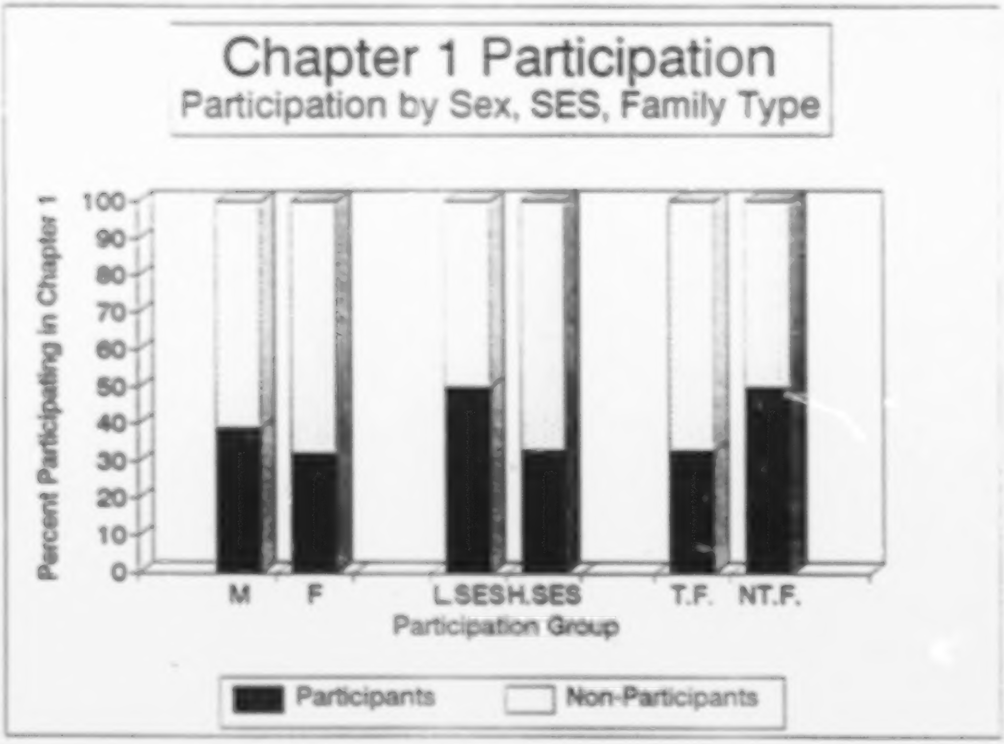


Table 4

Comparisons of Chapter 1 Participants in Primary Grades Only, Intermediate Grade Participants, and Non-Participants on the Basis of Selected Demographic Characteristics

Characteristic	Participants		Non-Participants
	Primary	Intermediate	
Males (61%)	4 (12%)	9 (27%)	20
	8% [50%]	17% [81%]	38%
[61%]			
Females (68%)	4 (21%)	2 (11%)	13
	8% [50%]	4% [19%]	25%
[39%]			
Chi-square = 2.34		df = 2	p = .31
Low socioeconomic status	2 (17%) 4% [25%]	4 (33%) 8% [36%]	6 (50%) 12% [18%]
High socioeconomic status	6 (15%) 12% [75%]	7 (18%) 13% [64%]	27 (67%) 52% [82%]
Chi-square = 1.56		df = 2	p = .46
Traditional family	6 (15%) 12% [75%]	7 (18%) 13% [64%]	27 (67%) 52% [82%]
Non-Traditional family	2 (17%) 4% [25%]	4 (33%) 8% [36%]	6 (50%) 12% [18%]
Chi-square = 1.56		df = 2	p = .46

Note. Percentages in parentheses were row percents. Percentages in brackets were column percents within each section. Percentages below the raw numbers were based on the total number of students in the sample (52).

intermediate group were from non-traditional families. Although not statistically significant, it appeared as though boys, students from low socioeconomic status and/or non-traditional families were more likely to participate in Chapter 1 in the intermediate grades than their counterparts.

A similar finding resulted when all students in the sample were examined, as shown in Graph 3. Although participation in Chapter 1 in the primary grades did not vary much among the various demographic groupings, differences became visible within the group of students who participated in the intermediate grades. Again, it appeared evident boys, and students from low socioeconomic and non-traditional families were more likely to receive Chapter 1 services.

The total number of years a student received Chapter 1 service was also examined. Table 5 listed the results of that examination and, as above, the Chi-square tests revealed no significant differences on the basis of sex, socioeconomic status, or family status.

Although Chapter 1 participation appeared unrelated to these demographic variables, as demonstrated by crosstabulations and Chi-square tests, coefficients of correlation were computed for these variables in a further attempt to better estimate the strength (or weakness) of these relationships. These correlations, reported in Table 6, also revealed no relationship between Chapter 1 participation and the demographic variables of age, sex, socioeconomic status, or family status.

In addition, there was a significant relationship between age and sex, which indicated that boys were more likely to be older than girls (either kept at home before Kindergarten or retained). Further, family status (traditional vs. non-traditional) was significantly correlated with socioeconomic status (free/reduced price lunch). This relationship between family status and socioeconomic status was also identified with

Graph 3

Graph of Chapter 1 Primary and Intermediate Participation Subgroups on the Basis of Sex, Socioeconomic Status (High vs. Low), and Family Status (Traditional vs. Non-Traditional)

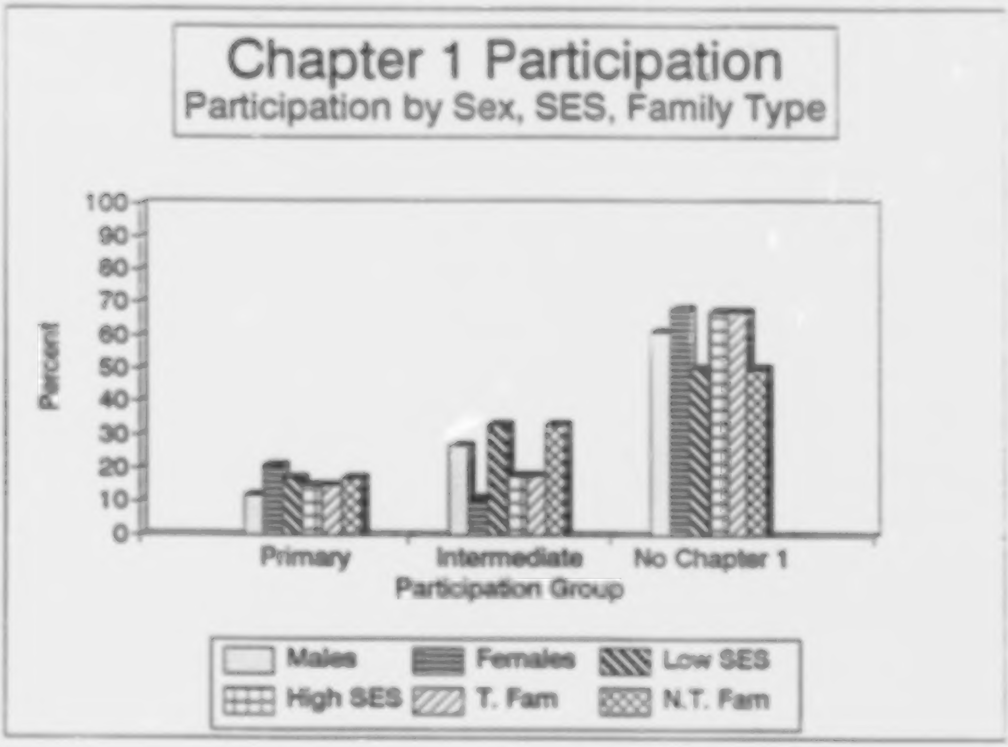


Table 5

Chi-square Comparisons of Students in Terms of Total Years of Chapter 1 Participation on the Basis of Selected Demographic Characteristics

Characteristic	Years of Chapter 1 participation					
	0	1	2	3	4	5
Males	20 39%	3 6%	3 6%	3 6%	1 2%	3 6%
Females	13 25%	3 6%	2 4%	1 2%	0 0%	0 0%
Chi-square = 3.14		df = 5			p = .68	
Low socioeconomic status	6 12%	2 4%	2 4%	1 2%	1 2%	0 0%
High socioeconomic status	27 52%	4 8%	3 6%	3 6%	0 0%	3 6%
Chi-square = 5.85		df = 5			p = .32	
Traditional family	27 52%	4 8%	4 8%	3 6%	0 0%	2 4%
Non-Traditional family	6 12%	2 4%	1 2%	1 2%	1 2%	1 2%
Chi-square = 4.34		df = 5			p = .50	

Note. Percentages below the raw numbers were based on the total number of students in the sample (52).

Table 6

Intercorrelations Between Participation in Chapter 1 and Selected Demographic Characteristics of Students

Characteristic		2	3	4	5	6	7
1.	Total years Chapt. 1	.81*	.87*	.04	.19	.07	.16
2.	Ever in Chapt. 1	--	.93*	-.11	.08	.15	.15
3.	Chapt. 1 Code[a]		--	.00	.08	.15	.15
4.	Age[b]			--	.42*	.08	.20
5.	Sex[c]				--	.04	.23
6.	Socioeconomic status[d]					--	.35*
7.	Family Code[e]						--

[a] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[b] Age was the number of months at the time the ITBS was administered in grade five.

[c] Sex was defined as 0 = female and 1 = male.

[d] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[e] Family code was defined as 0 = traditional, both parents present and 1= non-traditional.

*$p <$ .01

the Chi-square test which was significant at the .01 level. Together, these tests indicated that membership in a non-traditional family was closely linked with low socioeconomic status. However, membership in a non-traditional family was not significantly related to achievement or other measures of school outcomes examined in this study.

Chapter 1 eligibility and participation. The relationship between participation in the Chapter 1 program and sex, socioeconomic status, or family status has been reported above. However, participation and eligibility have been separate issues in Chapter 1 research. Eligibility for participation was based on scores on standardized reading tests administered during the school year prior to the year of Chapter 1 participation. For the students in this study, a student was eligible for Chapter 1 service at the first grade level if the score on the Metropolitan Readiness Tests administered at the end of Kindergarten was at the 60th percentile rank or lower (national norms). In grades one through five, those scoring at or below the 40th percentile rank on standardized reading tests were deemed eligible. (Testing administered in grades one and two used national norms while testing at grades three, four, and five used Iowa norms.) Participation in Maquoketa was based on "greatest need" which was determined by ranking students on the basis of their performance on these standardized reading tests. It should be noted that students who received remedial reading instruction in the Learning Disabilities program were not permitted to participate in Chapter 1. During a formal staffing of Chapter 1 and regular reading teachers held at the end of each school year, selection of students for the coming year was finalized. Exceptions to these selection decisions were made during the year of participation in cases where students transferred into the school, showed unexpected difficulties in the regular reading program, or showed unexpected gains in both the regular reading program and the Chapter 1 program.

The function of sex on student eligibility for Chapter 1 service at each grade level was reported in Table 7 and presented in Graph 4. Using the Chi-square test, it was found that sex was not a factor in eligibility for Chapter 1 service at all grade levels with the exception of grade two. However, sex was a factor when consideration was given to the fact that at no grade level was the majority of girls eligible for Chapter 1 while the majority of boys was eligible at grades three, four, and five.

The role of socioeconomic status on eligibility for Chapter 1 service was explored at each grade level and, as shown in Table 8 and Graph 5, socioeconomic status was not a statistically significant factor in eligibility, although one of the Chi-square calculations was statistically significant (grade four at the .05 level). However, it was noted that, with the exception of grade two, the majority of the low socioeconomic students was consistently categorized as eligible, reaching as high as 75 percent at grade four. This was in sharp contrast to the pattern for the group of high socioeconomic students in which the majority was consistently not eligible for Chapter 1 service. Before drawing conclusions on these data, it should be mentioned that there was a change in testing procedures at grade three when the ITBS was used for the first time and the tests were administered in September rather than April as was the case in grades Kindergarten, one, and two.

Family status was also examined as a factor in eligibility for Chapter 1 service at each grade level utilizing the Chi-square test. Using data presented in Table 9 and Graph 6, it was found that family status did not play a statistically significant role

Table 7

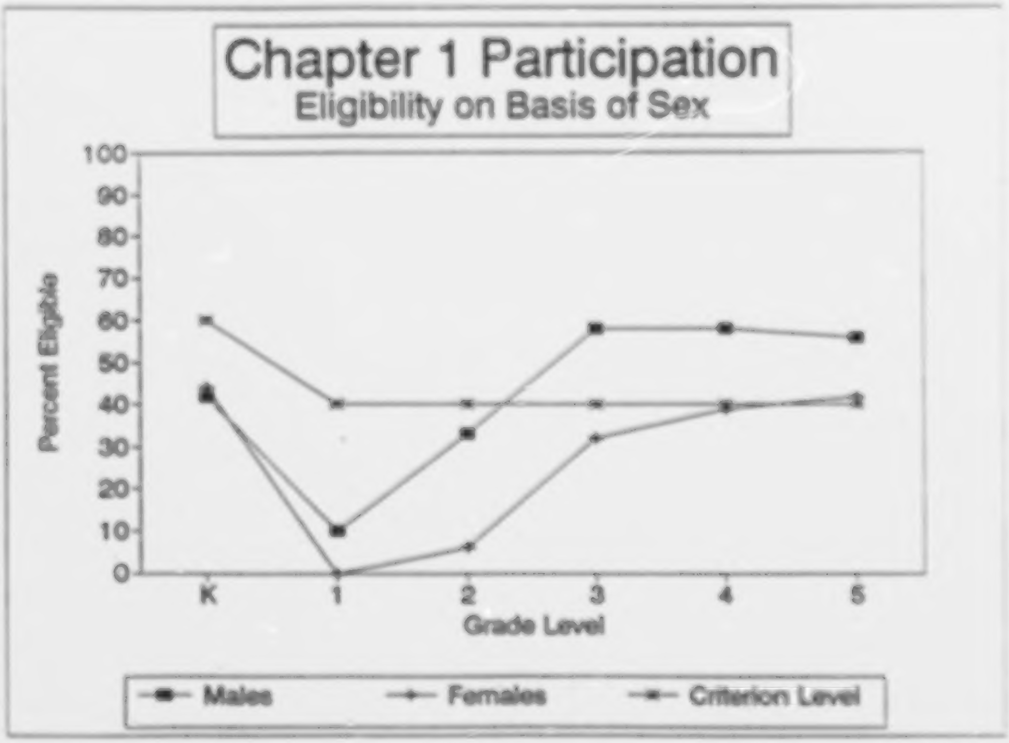
Sex and Eligibility for Chapter 1 Service

Grade of Test	Females		Males	
	Eligible for Chapt. 1		Eligible for Chapt. 1	
	Yes	No	Yes	No
K	7(44%) 17%	9(56%) 21%	11(42%) 26%	15(58%) 36%
	Chi-square = 8.41	df = 1	p = .89	
1	0(0%) 0%	15(100%) 34%	3 (10%) 7%	26(90%) 59%
	Chi-square = 1.66	df = 1	p = .19	
2	1(6%) 2%	17(94%) 35%	10(33%) 21%	20(67%) 42%
	Chi-square = 4.91	df = 1	p = .03	
3	6(32%) 12%	13(68%) 25%	19(58%) 37%	14(42%) 27%
	Chi-square = 3.26	df = 1	p = .07	
4	7(39%) 14%	11(61%) 22%	19(58%) 37%	14(42%) 27%
	Chi-square = 1.63	df = 1	p = .20	
5	8(42%) 16%	11(58%) 22%	18(56%) 35%	14(44%) 27%
	Chi-square = .95	df = 1	p = .33	

Note. Percentage in parentheses based on number of students in that section. Percentages below the raw numbers based on the number of students with valid scores at that grade level.

Graph 4

Graph of Chapter 1 Eligibility on the Basis of Sex by Grade Level



Note. Criterion level indicates the percent of students expected to be eligible.

Table 8

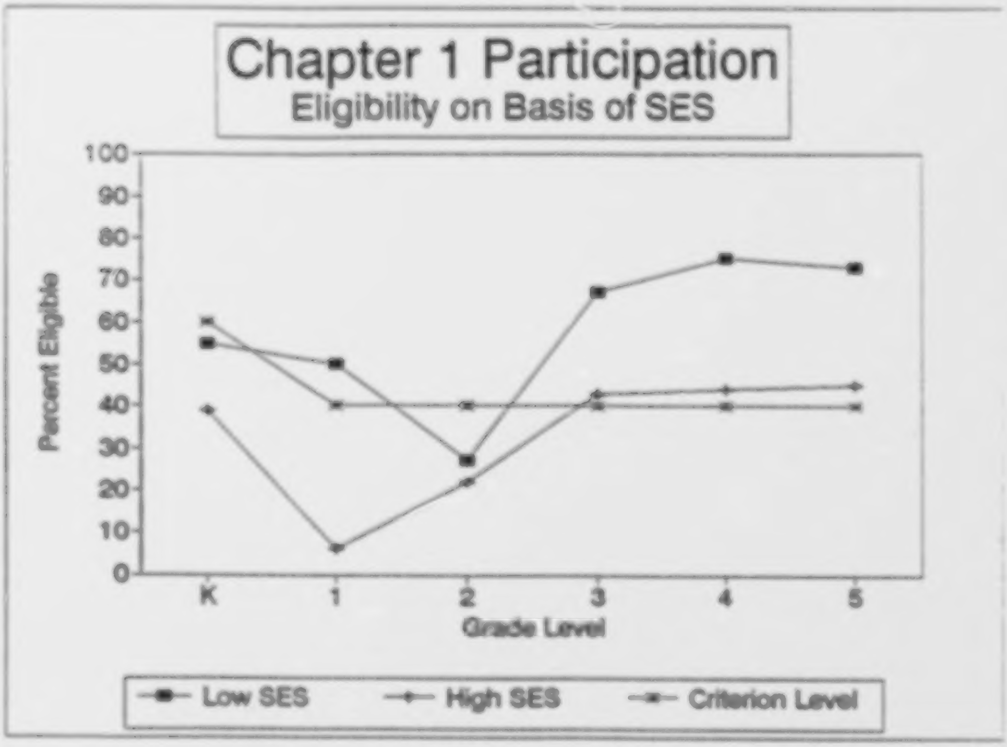
Socioeconomic Status and Eligibility for Chapter 1 Service

Grade of Test	Socioeconomic status			
	Low		High	
	Eligible for Chapt. 1		Eligible for Chapt. 1	
	Yes	No	Yes	No
K	5(55%) 12%	4(45%) 10%	13(39%) 31%	20(61%) 48%
	Chi-square = .75	df = 1	p = .38	
1	1(50%) 2%	1(50%) 2%	2(6%) 5%	31(94%) 70%
	Chi-square = .11	df = 1	p = .73	
2	3(27%) 6%	8(73%) 17%	8(22%) 17%	29(78%) 60%
	Chi-square = .15	df = 1	p = .14	
3	8(67%) 15%	4(33%) 8%	17(43%) 32%	23(57%) 44%
	Chi-square = 2.15	df = 1	p = .14	
4	4(75%) 18%	3(25%) 6%	17(44%) 33%	22(56%) 43%
	Chi-square = 3.62	df = 1	p = .05	
5	8(73%) 16%	3(27%) 6%	18(45%) 35%	22(55%) 43%
	Chi-square = 2.65	df = 1	p = .10	

Note. Percentage in parentheses based on number of students in that section. Percentages below the raw numbers based on the number of students with valid scores at that grade level.

Graph 5

Graph of Chapter 1 Eligibility on the Basis of Socioeconcmic Status (Low vs. High) by Grade Level



Note. Criterion level indicates the percent of students expected to be eligible.

Table 9

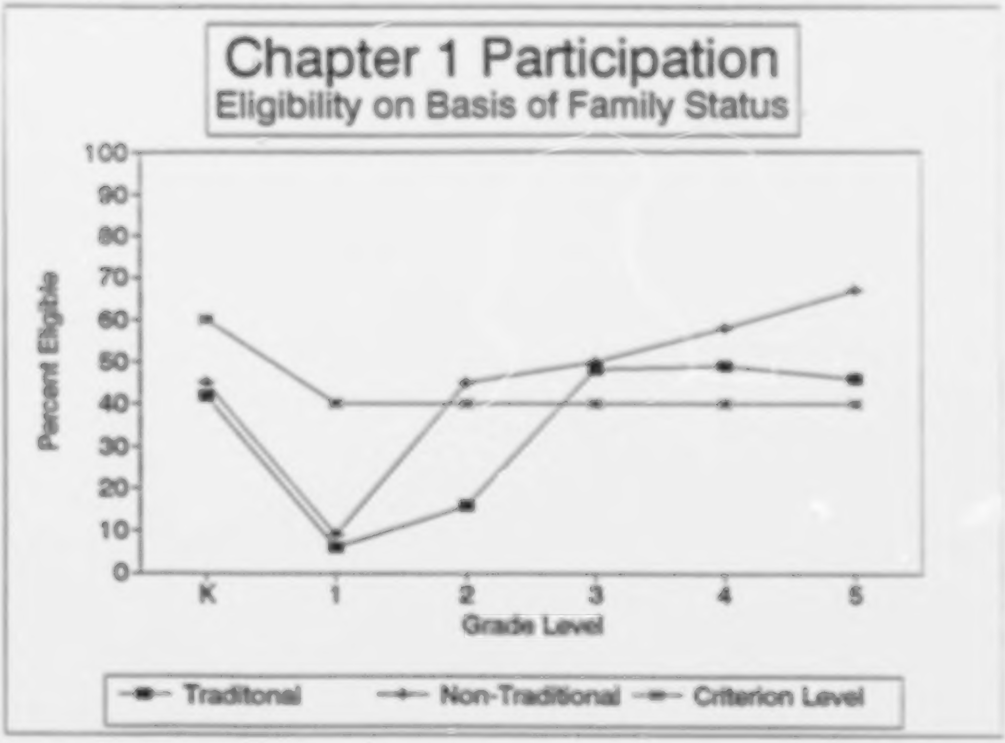
Family Status and Eligibility for Chapter 1 Service

Grade of Eligibility Test	Family Status			
	Traditional		Non-traditional	
	Eligible for Chapt. 1		Eligible for Chapt. 1	
	Yes	No	Yes	No
K	13(42%) 31%	18(58%) 43%	5(45%) 12%	6(55%) 14%
	Chi-square = .04	df = 1	p = .82	
1	2(6%) 5%	30(94%) 68%	1(9%) 2%	11(91%) 25%
	Chi-square = .06	df = 1	p = .79	
2	6(16%) 13%	31(84%) 65%	5(45%) 10%	6(55%) 13%
	Chi-square = 4.10	df = 1	p = .04	
3	19(48%) 37%	21(52%) 40%	6(50%) 12%	6(50%) 12%
	Chi-square = .02	df = 1	p = .85	
4	19(49%) 37%	20(51%) 39%	7(58%) 14%	5(42%) 10%
	Chi-square = .34	df = 1	p = .57	
5	18(46%) 35%	21(54%) 41%	8(67%) 16%	4(33%) 8%
	Chi-square = 1.55	df = 1	p = .21	

Note. Percentage in parentheses based on number of students in that section. Percentages below the raw numbers based on the number of students with valid scores at that grade level.

Graph 6

Graph of Chapter 1 Eligibility on the Basis of Family Status (Traditional vs. Non-Traditional) by Grade Level



Note. Criterion level indicates the percent of students expected to be eligible.

in student eligibility for service except at grade two. However, it was noted that at grades three, four, and five the percentage of students from traditional families deemed eligible for Chapter 1 remained less than 50. In contrast to this, the percentage of students from non-traditional families was at 50 or higher in these grades. Further, the percentage of students from non-traditional families deemed eligible increased steadily in grades three, four, and five.

Finally, Table 10 and Graph 7 provided a look at the relationship between eligibility and participation at each grade level. As described above, eligibility for participation in Chapter 1 was determined on the basis of screening test scores. Students scoring below a specified level were considered eligible for service. However, not all students who were eligible received service nor were all who received service eligible on the basis of their test scores. This was emphasized by the fact that all the Chi-square results were significant at the .01 level or less with the exception of grade five.

As dramatized in Graph 7, in grade two the percentage of students who were not eligible but served reached 24, but at grades three and four it dropped to 5 percent or lower. In contrast to this, at grades one, two, and three, the percentage of eligible students who were served was 55 or higher while at grades four and five this percentage dropped to 28 and 12 respectively.

Another look at the relationship between eligibility and participation was provided by Table 11 which lists the correlations between eligibility and participation on a grade level matrix. In contrast to the results from the Chi-square tests reported in Table 10, the correlations in Table 11 show a significantly high probability an eligible student will receive Chapter 1 service, with the exception of students in grade five.

Table 10

Eligibility for Chapter 1 Service and Participation in Chapter 1

Grade of Participation	Eligibility as Determined by Reading Test			
	Eligible		Not Eligible	
	Participated in Chapt.1		Participated in Chapt.1	
	Yes	No	Yes	No
1	10(55%) 24%	8(45%) 19%	4(17%) 10%	20(83%) 48%
	Chi-square = 7.00	df = 1	p = .01	
2	3(100%) 7%	0(0%) 0%	10(24%) 23%	31(76%) 70%
	Chi-square = 7.68	df = 1	p = .01	
3	7(64%) 15%	4(36%) 8%	2(5%) 42%	35(95%) 73%
	Chi-square = 18.87	df = 1	p = .00	
4	7(28%) 13%	18(72%) 35%	1(4%) 2%	26(96%) 50%
	Chi-square = 5.89	df = 1	p = .01	
5	3(12%) 6%	23(88%) 45%	0(0%) 0%	25(100%) 49%
	Chi-square = 3.06	df = 1	p = .08	

Note. Percentage in parentheses based on number of students in that section. Percentages below the raw numbers based on the number of students with valid scores at that grade level.

Graph 7

Graph of Chapter 1 Participation on the Basis of Eligibility by Grade Level

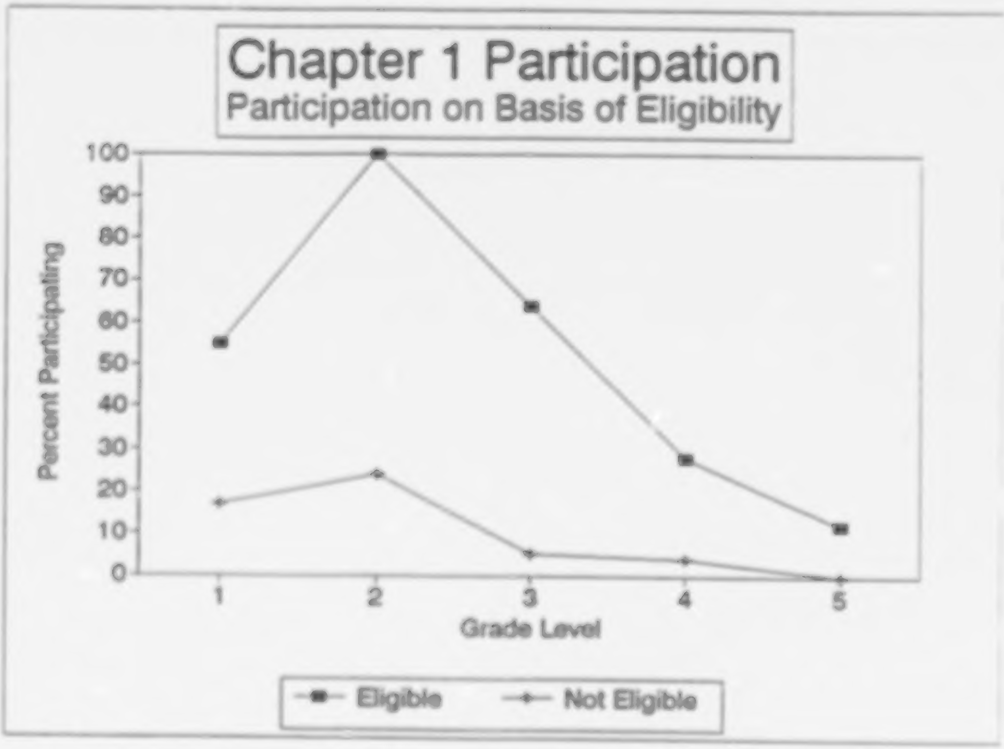


Table 11
Correlations Between Eligibility and Participation

Eligible (Test) [Norms]	Grade Level of Participation				
	1	2	3	4	5
Kind. (Metropolitan) [Nat.]	.41**	.36**	.19	.20	.13
Grade 1 (Gates-MacGinitie) [Nat.]	.20	.42**	.31*	.38*	.64**
Grade 2 (Gates-MacGinitie) [Nat.]	.30*	.34*	.63**	.69**	.47**
Grade 3 (ITBS) [Iowa]	.37**	.33*	.37**	.34*	.26
Grade 4 (ITBS) [Iowa]	.52**	.48**	.45**	.42**	.25
Grade 5 (ITBS) [Iowa]	.25	.21	.35*	.42**	.25

$^{*}p < .05$ $^{**}p < .01$

Participation in Chapter 1 and mobility. The factor of mobility as a variable in Chapter 1 participation was eliminated from this longitudinal study by including only students who had been continuously enrolled during grades three, four, and five. Of the 62 students enrolled in fifth grade at the time the ITBS was administered, only 10 (16 percent) did not meet this criterion and therefore were not included in the statistical analyses performed.

Participation in Chapter 1 and IQ. IQ was measured using the Cognitive Abilities Tests (CAT). Administered during the first week of September in grades three and five, the CAT provides three estimates of intelligence: a verbal IQ, a quantitative IQ, and a non-verbal IQ. As reported in Table 12, all measures of Chapter 1 participation were negatively correlated with all measures of IQ. In addition, age (a function of being held out of school before Kindergarten or retained) was also correlated negatively with IQ. The correlations for sex demonstrated that in grade 3 boys had significantly lower IQ scores than girls on the verbal-IQ, but that sex was not significantly correlated with any other measure of IQ. Although negative on all subtests, there was no statistically significant relationship between IQ and socioeconomic status with the exception of the non-verbal IQ on which low socioeconomic students scored lower than high socioeconomic students at both grade three and grade five. Family code (traditional vs. non-traditional) failed to reveal any correlation with IQ scores.

Analysis of variance was used to compare students on measures of IQ on the basis of Chapter 1 participation. Three groups of students were compared, those who had never received Chapter 1 service, students who participated only in primary

Table 12

Correlations between Chapter 1 Participation and Cognitive Abilities Tests

Variable	Cognitive Abilities Test[a]					
	Grade 3			Grade 5		
	V	Q	NV	V	Q	NV
Total Years in Chapt.1	-.52**	-.53**	-.34*	-.50**	-.45**	-.29*
Ever in Chapt.1	-.43**	-.48**	-.38**	-.49**	-.58**	-.39**
Chapter 1 code[b]	-.50**	-.51**	-.43**	-.54**	-.57**	-.38
Age[c]	-.51**	-.38**	-.42**	-.43**	-.35**	-.22
Sex[d]	-.39**	-.17	-.23	-.14	-.13	.03
Socioeconomic status[e]	-.25	-.24	-.32*	-.25	-.13	-.29*
Family Code[f]	-.07	-.06	-.07	-.15	-.08	.11

---

[a] Cognitive Abilities Tests subtests were V = Verbal, Q = Quantitative, and NV = Non-Verbal

[b] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[c] Age was the number of months at the time the ITBS was administered in grade five.

[d] Sex was defined as 0 = female and 1 = male.

[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

*$p < .05$ **$p < .01$

grades one and two, and students who participated in intermediate grades three, four, and five. The results of the analysis ofvariance tests for each CAT test, reported in Tables 13 - 18, were all significant at the .01 level or less. Table 19 summarized the t-test comparisons of the means for each subgroup on each variable. These data show no significant difference between the no Chapter 1 and the primary groups on the IQ measures (except for the grade five quantitative IQ) and no differences between the primary and intermediate groups (except for the grade three verbal IQ). However, the comparison between the no Chapter 1 and intermediate groups was significant at the .01 level for all IQ measures.

As plotted in Graph 8, students in this sample showed dramatic increases in IQ scores between grade three and grade five on both the verbal(V) and quantitative (Q) IQ subtests. However, on the non-verbal (N-V) IQ subtest only the intermediate Chapter 1 students displayed an increase in IQ between the grade three and grade five testings while both the primary and no Chapter 1 groups declined on this measure.

Participation in Chapter 1 and placement in special education services. One desirable outcome of Chapter 1 service would be a reduction in the need for special education services of participants. Of the nineteen students in this group, only seven received special education services, all of whom were served by both the Learning Disabilities and Speech and Language programs with the exception of one student who received only Speech and Language services. Correlation coefficients and Chi-square tests of crosstabulations of Chapter 1 participation by receipt of special education services were all non-significant and, therefore, were not detailed in this report.

Table 13

Analysis of Variance of Grade 3 Verbal IQ and Participation in Chapter 1

Effect	SS	df	MS	F	p
V-IQ	4361.50	2	2180.75	8.43	.0010
Within	12676.42	49	258.70		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	100.88	18.50	33
Primary	94.00	8.12	8
Intermediate	77.91	11.21	11
Entire Sample	94.96	18.28	52

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	6.88	1.085	49	.2829
No Chapt.1 - Intermed.	22.97	4.102	49	.0003
Primary - Intermed.	16.09	2.153	49	.0341

Note. *t* based on pooled variance estimates.

Table 14

Analysis of Variance of Grade 3 Quantitative IQ and Participation in Chapter 1

Effect	SS	df	MS	F	p
Q-IQ	2953.75	2	1476.87	8.88	.0007
Within	8151.48	49	166.36		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	100.06	14.31	33
Primary	91.13	8.17	8
Intermediate	81.55	10.62	11
Entire Sample	94.77	14.76	52

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	8.94	1.758	49	.0813
No Chapt.1 - Intermed.	18.52	4.123	49	.0003
Primary - Intermed.	9.58	1.598	49	.1125

Note. *t* based on pooled variance estimates.

Table 15

Analysis of Variance of Grade 3 Non-Verbal IQ and Participation in Chapter 1

Effect	*SS*	*df*	*MS*	*F*	*p*
NV-IQ	2549.07	2	1274.53	5.61	.0066
Within	11134.24	49	227.23		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	109.52	17.53	33
Primary	103.50	5.66	8
Intermediate	92.00	10.38	11
Entire Sample	104.88	16.38	52

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	6.02	1.013	49	.3173
No Chapt.1 - Intermed.	17.52	3.337	49	.0019
Primary - Intermed.	11.50	1.642	49	.1032

Note. *t* based on pooled variance estimates.

Table 16

Analysis of Variance of Grade 5 Verbal IQ and Participation in Chapter 1

Effect	SS	df	MS	F	p
V-IQ	3950.77	2	1975.39	9.76	.0004
Within	9711.85	48	202.33		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	110.90	16.60	32
Primary	101.75	10.18	8
Intermediate	89.18	6.65	11
Entire Sample	104.78	16.53	51

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	9.16	1.628	48	.1061
No Chapt.1 - Intermed.	21.72	4.370	48	.0002
Primary - Intermed.	12.57	1.902	48	.0600

Note. *t* based on pooled variance estimates.

Table 17

Analysis of Variance of Grade 5 Quantitative IQ and Participation in Chapter 1

Effect	*SS*	*df*	*MS*	*F*	*p*
Q-IQ	2393.58	2	1196.79	12.47	.0001
Within	4606.10	48	95.96		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	111.13	10.56	32
Primary	99.38	8.57	8
Intermediate	95.55	7.98	11
Entire Sample	105.92	11.83	51

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	11.75	3.034	48	.0041
No Chapt.1 - Intermed.	15.58	4.550	48	.0001
Primary - Intermed.	3.83	.841	48	.4091

Note. *t* based on pooled variance estimates.

Table 18

Analysis of Variance of Grade 5 Non-Verbal IQ and Participation in Chapter 1

Effect	*SS*	*df*	*MS*	*F*	*p*
NV-IQ	935.18	2	467.59	4.39	.0174
Within	5166.85	48	106.60		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	107.41	11.11	32
Primary	99.75	6.36	8
Intermediate	97.82	10.04	11
Entire Sample	104.14	11.00	51

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	7.66	1.876	48	.0634
No Chapt.1 - Intermed.	9.59	2.657	48	.0103
Primary - Intermed.	1.93	.403	48	.6906

Note. *t* based on pooled variance estimates.

Table 19

Summary of t-Test Comparisons of Measures of IQ and Participation in Chapter 1

Subgroups Compared	Cognitive Abilities Test[a]					
	Grade 3			Grade 5		
	V	Q	NV	V	Q	NV
No Chapt. 1 vs. Primary	--	--	--	--	**	--
No Chapt. 1 vs. Intermed.	**	**	**	**	**	**
Primary vs. Intermed.	*	--	--	--	--	--

[a] Cognitive Abilities Tests subtests were V = Verbal, Q = Quantitative, and NV = Non-Verbal

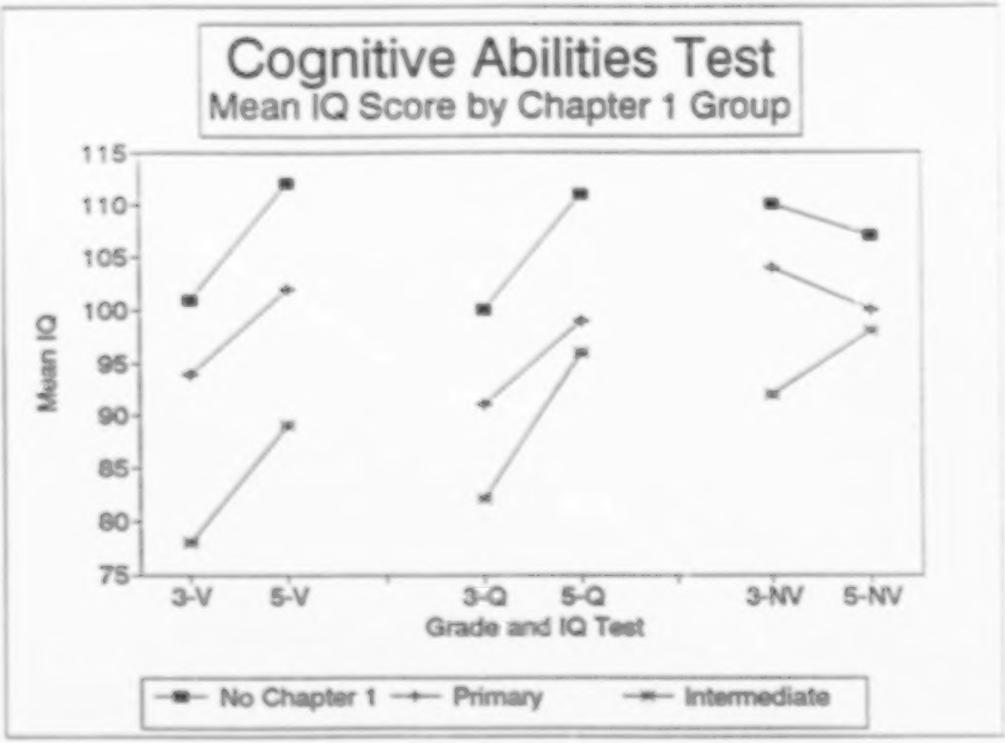
*p< .05 **p< .01

Table of Means

IQ Test	Category of Chapter 1 Participation		
	No Chapter 1	Primary	Intermediate
Grade 3 Verbal IQ	100.88	94.00	77.91
Grade 3 Quantitative IQ	100.06	91.13	81.55
Grade 3 Non-Verbal IQ	109.52	103.50	92.00
Grade 5 Verbal IQ	111.90	101.75	89.18
Grade 5 Quantitative IQ	111.13	99.38	95.55
Grade 5 Non-Verbal IQ	107.41	99.75	97.82

Graph 8

Graph of Cognitive Abilities Tests Mean Verbal, Quantitative, and Non-Verbal IQ Scores at Grades 3 and 5 by Chapter 1 Participation Group



Results Relating to Chapter 1 Participation in the Primary Grades only as a Basis for Evaluation of The Sustaining Effects of Chapter 1

Eight students (15 percent of the total sample and 42 percent of those who participated in Chapter 1) received Chapter 1 service only during the primary grades (one and two). Eleven students (21 percent of the total sample and 58 percent of those who participated in Chapter 1) received service in the intermediate grades (three, four, and five). These two groups of Chapter 1 participants were labeled the primary and intermediate groups.

The primary group became the focus of the sustaining effects evaluation reported in this study because this group of students had been staffed out at the end of grades one or two, received no further Chapter 1 assistance, and their success in the regular education program in grades three, four, and five could be readily examined. In theory, if their reading problems had been "remediated," then it would be predicted that the primary group students would *not* be significantly different from students who had never received Chapter 1 help when compared using standardized measures of achievement and regular education program outcomes at grades three, four, and five. In other words, it was expected that the primary group would manifest sustaining effects of Chapter 1 participation which "closed the gap" between Chapter 1 participants and non-participants on measures of regular program outcomes. Within this study, to "close the gap" meant that there were no statistically significant differences between the

Chapter 1 primary group and the group which never received Chapter 1 service.

Chapter 1 participation and attendance as measured by total days absent in grades Kindergarten through four. In addition to requiring use of standardized tests as measures of the effect of Chapter 1 participation, Chapter 1 regulations suggest that program evaluations include other desired outcomes among which was attendance. On this measure, it was believed that one of the effects of Chapter 1 would be improved attendance. However, when the total number of days absent in grades Kindergarten through four was correlated with the total years of Chapter 1 participation, a non-significant coefficient of .11 was the result. In fact, non-significant correlation coefficients of total days absent were found for all variables reported in this study. When the average number of days absent was computed for each of the Chapter 1 participation groups, the results showed that students who were never served in Chapter 1 averaged 31 days absent, students served in the primary grades averaged only 26 days absent, and students served in the intermediate grades averaged 33 days absent. Using analysis of variance and *t*-tests, it was determined that these differences were non-significant and therefore were not detailed in this report.

Chapter 1 participation and gains on standardized reading tests as measured using grade equivalent scores (Iowa norms). The coefficients of correlation summarized in Table 20 revealed a negative relationship between total years of Chapter 1 participation and ITBS reading grade equivalent scores, Iowa norms. This negative correlation was repeated when students were compared on the binomial variable of whether or not they had received any Chapter 1 service. However, the correlations failed to reach the level of significance when Chapter 1 participation

Table 20

Intercorrelations Between Participation in Chapter 1 and ITBS Reading Grade Equivalents (Iowa Norms) at Grades Three, Four, and Five

Characteristic		3	4	5
1.	Total years Chapt.1	-.48**	-.53**	-.39**
2.	Ever in Chapt.1	-.49**	-.56**	-.42**
3.	Chapt.1 Code[a]	-.51**	-.27	-.19
4.	Age[b]	-.23	-.22	-.26*
5.	Sex[c]	-.29	-.29*	-.29*
6.	Socioeconomic status[d]	-.26*	-.29*	-.14
7.	Family Code[e]	-.06	-.05	-.08

[a] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[b] Age was the number of months at the time the ITBS was administered in grade five.

[c] Sex was defined as 0 = female and 1 = male.

[d] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[e] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

*p< .05 **p< .01

was blocked into three groups based on whether or not the student had ever received Chapter 1, received Chapter 1 service only in grades one or two (primary group), or received service in grades three, four, or five (intermediate group). The other demographic variables of age, sex, socioeconomic status, and family status were also examined. It was found that boys scored significantly lower than girls in grades four and five, that students from low socioeconomic families scored significantly lower than students from high socioeconomic families in grades three and four, that older students scored significantly lower at grade five, and that family status had no relationship with reading test scores.

Analysis of variance tests of the mean ITBS reading scores (GE, Iowa norms) of the three groups were reported in Tables 21 - 23 and showed that at grades three and five, there was no significant difference between the no Chapter 1 and the primary groups. Further, there were significant differences between the no Chapter 1 group and the group served in the intermediate grades. It was also observed that the gain in GEs between grade three and five, as reported in Table 24, showed almost identical gain for the no Chapter 1 and primary groups during these grades. One unexpected result was that the no Chapter 1 group made its greatest gain between the grade three and four testing while the other two groups made their greatest gains between the grade four and five testing. Graph 9 illustrated the growth pattern for each of these three groups and showed that each had made steady growth between September of grade three and September of grade five.

Table 21

Analysis of Variance of Grade 3 ITBS Reading Grade Equivalent (Iowa Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
G3-GE	1545.37	2	772.69	9.06	.0007
Within	4180.94	49	85.33		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	33.42	10.74	33
Primary	27.13	5.59	8
Intermediate	20.00	5.22	11
Entire Sample	29.62	10.60	52

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	6.30	1.730	49	.0861
No Chapt.1 - Intermed.	13.42	4.174	49	.0002
Primary - Intermed.	7.13	1.660	49	.0995

Note. *t* based on pooled variance estimates.

Table 22

Analysis of Variance of Grade 4 ITBS Reading Grade Equivalent (Iowa Norms) and Chapter 1 Participation

Effect	SS	df	MS	F	p
G4-GE	3791.45	2	1895.73	12.01	.0001
Within	7575.30	48	157.82		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	45.94	15.24	32
Primary	32.88	4.94	8
Intermediate	25.64	4.54	11
Entire Sample	39.51	15.08	51

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	13.06	2.630	48	.0110
No Chapt.1 - Intermed.	20.30	4.624	48	.0001
Primary - Intermed.	7.24	1.240	48	.2187

Note. *t* based on pooled variance estimates.

Table 23

Analysis of Variance of Grade 5 ITBS Reading Grade Equivalent (Iowa Norms) and Chapter 1 Participation

Effect	SS	df	MS	F	p
G5-GE	2598.63	2	1299.31	6.78	.0029
Within	9198.78	48	191.64		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	54.75	15.35	32
Primary	47.63	6.86	8
Intermediate	37.09	12.52	11
Entire Sample	49.82	15.36	51

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	7.13	1.302	48	.1963
No Chapt.1 - Intermed.	17.66	3.650	48	.0009
Primary - Intermed.	10.53	1.638	48	.1042

Note. *t* based on pooled variance estimates.

Table 24

Summary of t-Test Comparisons ITBS Reading Grade Equivalents (Iowa Norms) and Participation in Chapter 1

Subgroups Compared	ITBS Grade Equivalents		
	Grade of Testing		
	3	4	5
No Chapt.1 vs. Primary	--	*	--
No Chapt.1 vs. Intermed.	**	**	**
Primary vs. Intermed.	--	--	--

*p< .05 **p< .01

Table of Means ITBS Reading Tests Grade Equivalents, Iowa Norms

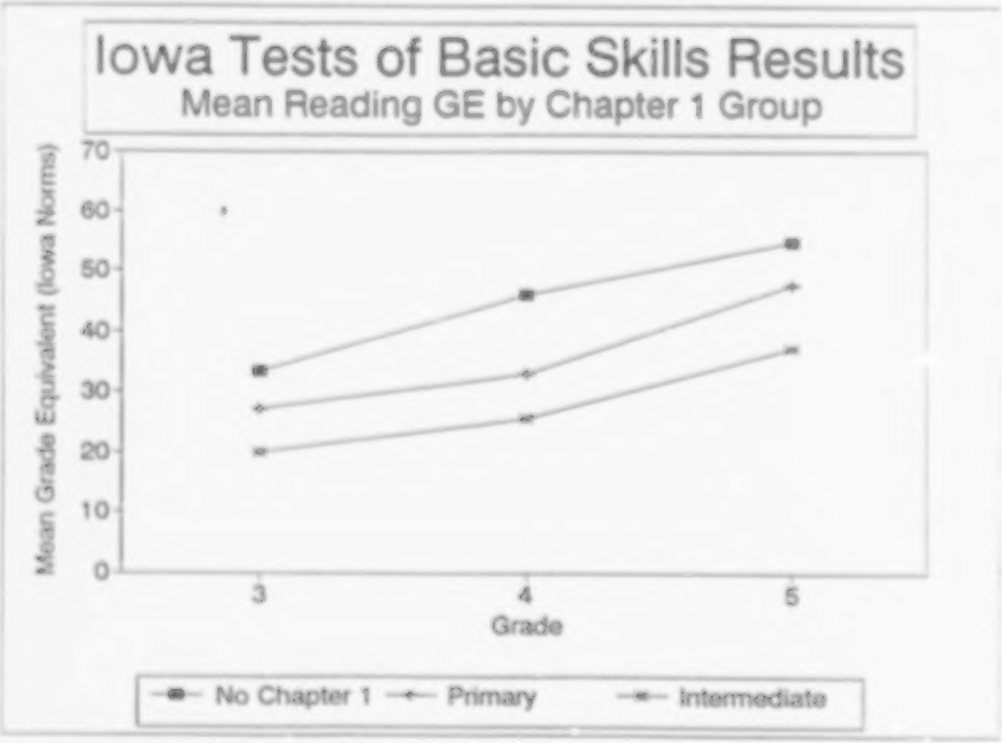
ITBS Reading Test	Category of Chapter 1 Participation		
	No Chapter 1	Primary	Intermediate
Grade 3	33.42	27.13	20.00
Grade 4	45.94	32.88	25.64
Grade 5	54.75	47.63	37.09

Table of Mean ITBS Reading Tests GE Gains, Iowa Norms

Grades Compared	Category of Chapter 1 Participation		
	No Chapter 1	Primary	Intermediate
Grade 3 to 4	12.52	5.75	5.64
Grade 4 to 5	8.81	14.75	11.45
Grade 3 to 5	21.33	20.50	17.09

Graph 9

Graph of Iowa Tests of Basic Skills Reading Grade Equivalent Scores (Iowa Norms) on the Basis of Chapter 1 Participation



Chapter 1 participation and reading achievement gains as measured using Normal Curve Equivalents (National and Iowa norms).

The standard method used to measure the impact of Chapter 1 participation on the reading achievement of students is through the use of the normal curve equivalent (NCE) metric. By usingstandardized reading tests, the student's ranking within the norming group at the time of the pretest can be compared with the student's ranking on the posttest. Because ranking measures are on the ordinal scale, they are converted to an equal interval scale, the NCE, to make it possible to compute gains. This Chapter 1 evaluation model assumes low achieving students who do not receive Chapter 1 service will demonstrate either no gain or a loss in NCE units when posttest NCE is subtracted from pretest NCE. Therefore, all gains for Chapter 1 students are defined as the benefit, impact, or "treatment effect" of Chapter 1 service. In addition, with this model, the NCE gains (or losses) for Chapter 1 students can be averaged to determine grade level, building, and district Chapter 1 program effects. It is important to remember that the average NCE is 50; and, therefore, an average student demonstrating average growth would have an NCE of 50 when tested at each grade level.

Standardized reading tests were administered to students in this study each year, beginning with Kindergarten when the Metropolitan Readiness Tests was administered in April. The reading readiness score was used. In grades one and two the Gates-MacGinitie Reading Tests was administered, also in April, and the total reading score was used. (Testing at grades Kindergarten, one, and two used national norms.) In grades three through five the Iowa Tests of Basic Skills reading test (Iowa norms) was used. Because the ITBS was administered during the last week of September, the testing cycle established during the primary grades was disrupted and was believed to have had a negative effect upon accurate measurement of student growth. When combined with the change from the Gates-MacGinitie Tests, which reported only national norms, it became difficult to justify longitudinal comparisons of student performance on standardized reading tests. Nevertheless, a longitudinal comparison of student performance was attempted using NCE units.

First, correlations were computed to estimate the relationships between performance on the various tests. These were reported in Table 25 where strong positive correlations between tests administrations were evidenced.

Second, reading test scores were correlated with various demographic variables. Correlations based on total years of Chapter 1 service and ever served in Chapter 1 were all negative at the .01 level or less. Although correlation coefficients on the basis of Chapter 1 code and reading NCE scores were not significant at grades Kindergarten through two, they were significant at grades three through five.

Age was the only demographic variable which was significantly correlated (negative) with the Kindergarten test score. Although not significant, age was negatively correlated with all other test scores.

Sex (boys) was negatively correlated with all test scores and significantly so with the grade two and three tests.

When the correlations between socioeconomic status and reading test scores were examined, it was important to recall that the socioeconomic index was a binomial variable in which a zero meant the student did not qualify for free/reduced price lunches, and a one meant the student participated in that program. The consistently negative correlations revealed that students from the high socioeconomic group had higher reading test scores than the

Table 25

Intercorrelations between Chapter 1 Participation and Standardized Reading Tests using NCE scores (National and Iowa Norms)

Grade of Test	Grade of Test[a]					
	K	1	2	3	4	5
Kindergarten	--	.54**	.43**	.39**	.52**	.41*
Grade 1		--	.84**	.66**	.71**	.53**
Grade 2			--	.76**	.74**	.68**
Grade 3				--	.77**	.80**
Grade 4					--	.79**
Total years in Chapt.1	-.42**	-.63**	-.68**	-.50**	-.61**	-.50**
Ever in Chapt.1	-.50**	-.69**	-.62**	-.49**	-.62**	-.47**
Chapter 1 code[b]	.01	.02	-.03	-.54**	-.38**	-.31**
Age[c]	-.39**	-.07	-.23	-.24	-.18	-.27
Sex[d]	-.18	-.29	-.37**	-.32*	-.25	-.18
Socioeconomic status[e]	-.25	-.20	-.18	-.28*	-.31*	-.13
Family Code[f]	-.10	-.06	-.15	-.12	-.04	.07

[a] Tests used at each grade level are: Kindergarten, Metropolitan Readiness (National norms); grades one and two, Gates-MacGinitie (National norms); grades three, four, and five, Iowa Tests of Basic Skills (Iowa norms)

[b] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[c] Age was the number of months at the time the ITBS was administered in grade five.

[d] Sex was defined as 0 = female and 1 = male.

[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

*p< .05 **p< .01

students from the low socioeconomic group and that this was statistically significant at the grade three and four testing.

On the family status variable, none of the correlations with reading test scores were significant.

Third, an analysis of variance was computed for each of the reading test scores using Chapter 1 participation as the independent variable. For these tests Chapter 1 participation was blocked into three groups: (a) students who received no Chapter 1 service, (b) students who received Chapter 1 service only in primary grades one and two, and (c) students who received Chapter 1 service in intermediate grades three, four, or five. This blocking was done to identify evidence for the sustaining effects of Chapter 1 participation on students served in grades one or two and then promoted or staffed out. It was expected that their achievement would be such that there was no difference between them and the students who had never received Chapter 1 service. Further, it was predicted that they would have "closed the achievement gap" which had been present in the primary grades.

Tables 26 - 31 reported the results of the analysis of variance test for each of these reading achievement test score variables. Graph 10 used NCE units to portray the changes in performance on standardized reading tests for these three Chapter 1 participation groups. By definition, "average" performance was 50 NCE units. The no Chapter 1 group showed above average performance during the primary years (national norms) with a decline to "average" performance in grades three through five (Iowa norms). This decline coincided with the change from the Gates-MacGinitie to the Iowa Tests of Basic Skills. In addition to the change in tests, there was a change in time of administration from the spring to fall as well as the change from

Table 26

Analysis of Variance of Kindergarten Metropolitan Readiness Test, Reading Readiness NCE (National Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Kind.	2684.20	2	1342.10	6.47	.0040
Within	8092.88	39	207.51		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	66.80	16.59	25
Primary	51.13	5.17	8
Intermediate	50.00	12.74	9
Entire Sample	60.21	16.21	42

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	15.68	2.679	39	.0104
No Chapt.1 - Intermed.	16.80	3.000	39	.0048
Primary - Intermed.	1.13	.160	39	.8471

Note. *t* based on pooled variance estimates.

Table 27

Analysis of Variance of Grade One Gates-MacGinitie Reading Test, Total Reading NCE Score (National Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Grade 1	4963.82	2	2481.91	18.99	.0002
Within	5359.34	41	130.72		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	69.54	13.91	26
Primary	50.88	5.19	8
Intermediate	46.00	6.11	10
Entire Sample	60.80	15.49	44

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	18.66	4.038	41	.0004
No Chapt.1 - Intermed.	23.54	5.533	41	.0003
Primary - Intermed.	4.88	.899	41	.3774

Note. *t* based on pooled variance estimates.

Table 28

Analysis of Variance of Grade Two Gates-MacGinitie Reading Test, Total Reading NCE Score (National Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Grade 2	5294.30	2	2647.19	17.27	.0003
Within	6896.87	45	153.26		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	65.38	13.77	29
Primary	51.75	6.86	8
Intermediate	40.36	11.20	11
Entire Sample	57.38	16.11	48

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	13.63	2.757	45	.0082
No Chapt.1 - Intermed.	25.02	5.706	45	.0002
Primary - Intermed.	11.39	1.979	45	.0510

Note. *t* based on pooled variance estimates.

Table 29

Analysis of Variance of Grade Three Iowa Tests of Basic Skills, Reading NCE Score (Iowa Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Grade 3	5652.01	2	2826.00	10.33	.0003
Within	13400.66	49	273.48		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	51.42	18.75	33
Primary	40.63	10.89	8
Intermediate	25.55	11.48	11
Entire Sample	44.29	19.33	52

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	10.80	1.657	49	.1001
No Chapt.1 - Intermed.	25.88	4.495	49	.0001
Primary - Intermed.	15.08	1.962	49	.0524

Note. *t* based on pooled variance estimates.

Table 30

Analysis of Variance of Grade Four Iowa Tests of Basic Skills, Reading NCE Score (Iowa Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Grade 4	8416.31	2	4208.15	17.27	.0002
Within	11693.73	48	243.62		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	53.66	18.28	32
Primary	34.88	8.74	8
Intermediate	23.18	8.94	11
Entire Sample	44.14	20.05	51

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	18.78	3.044	48	.0040
No Chapt.1 - Intermed.	30.47	5.586	48	.0002
Primary - Intermed.	11.69	1.612	48	.1096

Note. *t* based on pooled variance estimates.

Table 31

Analysis of Variance of Grade Five Iowa Tests of Basic Skills, Reading NCE Score (Iowa Norms) and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Grade 5	6392.70	2	3196.35	9.56	.0004
Within	15567.89	48	324.33		

Table of Means and Standard Deviations

Subgroup	Mean	*SD*	*n*
No Chapter 1	53.22	21.00	32
Primary	43.63	9.35	8
Intermediate	25.36	11.32	11
Entire Sample	45.71	20.96	51

Comparison of Means

Subgroups Compared	Difference	*t*	*df*	*p*
No Chapt.1 - Primary	9.59	1.348	48	.1809
No Chapt.1 - Intermed.	27.86	4.425	48	.0001
Primary - Intermed.	18.26	2.182	48	.0320

Note. *t* based on pooled variance estimates.

Table 32

Summary of t-Test Comparisons of Reading Test NCE Scores and Participation in Chapter 1

Subgroups Compared	Reading Test NCE Scores Grade of Testing K	1	2	3	4	5
No Chapt.1 vs. Primary	**	**	**	--	**	--
No Chapt.1 vs. Intermed.	**	**	**	**	**	**
Primary vs. Intermed.	--	--	--	--	--	*

*p< .05 **p< .01

Table of Means of Reading Tests NCEs

Grade of Reading Test	Category of Chapter 1 Participation No Chapter 1	Primary	Intermediate
Kindergarten	66.80	51.13	50.00
Grade 1	69.54	50.88	46.00
Grade 2	65.38	51.75	40.36
Grade 3	51.42	40.63	25.55
Grade 4	53.66	34.88	23.18
Grade 5	53.22	43.63	25.36

Note. National norms used at grades Kindergarten, one, and two. Iowa norms used at grades three, four, and five.

national norms to Iowa norms. Because of these changes, the lines on Graph 10 were not continued between grade two and three.

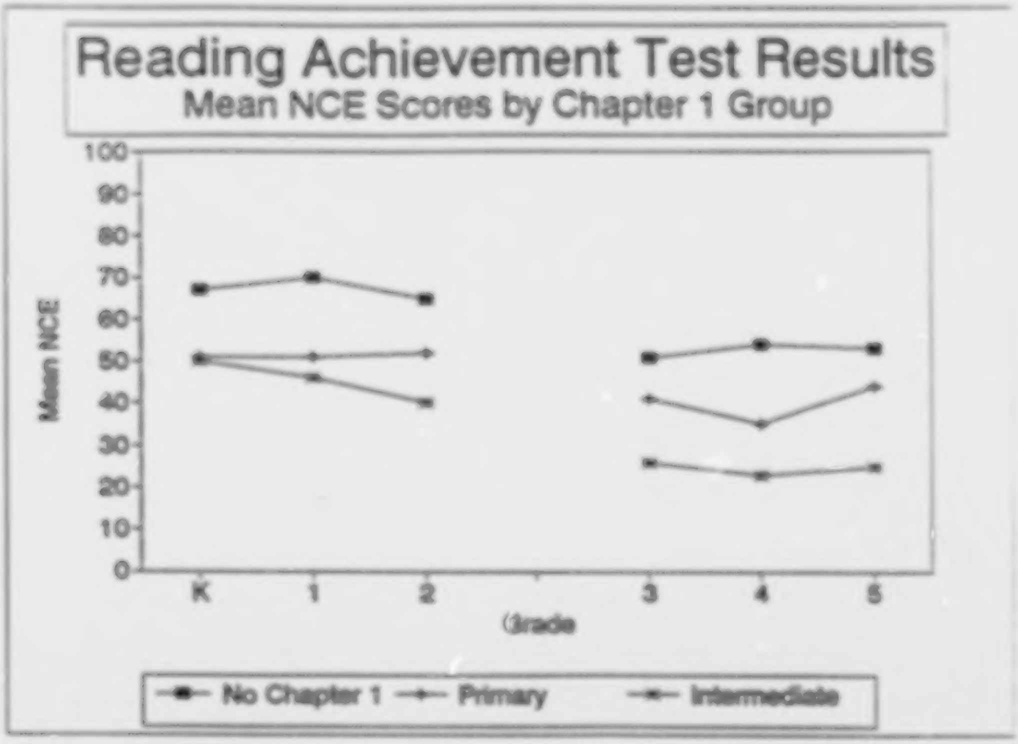
As shown in these data, students in the primary group began with average NCE scores in Kindergarten and maintained this level of achievement in grades one and two. During grade three, when members of this group did not receive Chapter 1 service, there was a marked decline of 5.7 NCE units between the grade three and four test administrations. However, this loss was more than overcome between the fourth and fifth grade testing by an NCE gain of 8.7 NCE units. Using the t-test, it was found that by fifth grade the achievement gap between the no Chapter 1 and primary groups was statistically closed.

The intermediate group, however, tested average in Kindergarten but declined steadily during grades one, two, and three; a decline which did not level out until the grade four and five testing. As found using t-tests, although the intermediate group scored consistently lower than the primary group, the scores between the two Chapter 1 groups were not significantly different until the fifth grade testing when the primary group surged to "close the gap" with the no Chapter 1 students, leaving the intermediate group behind.

Using the statistical tests of correlation, analysis of variance, and t-tests, it was found that reading achievement as measured by scores on standardized tests was significantly related to participation in Chapter 1 and that students who received Chapter 1 service in the primary grades were able to "close the gap" by the time they were administered the fifth grade tests. The students served by Chapter 1 in the intermediate grades were unable to accomplish that goal.

Graph 10

Graph of Standardized Reading Achievement Tests Normal Curve Equivalent Scores on the Basis of Chapter 1 Participation



Chapter 1 participation and success in the regular program as measured by reading group placement. At Briggs, students in grade one were divided into three reading instruction groups (high, average, low) within each homeroom. However, in grades two through four, students were divided into seven reading groups within the entire grade level. One measure of success in the regular reading program would be placement in an average or above average reading group. In this study, placement in groups one, two, three, or four was defined as "average or above," while placement in groups five, six, or seven was defined as "below average." Because the end of year testing and group placement data were routinely recorded in student cumulative files, it was possible to examine these data for any possible evidence of Chapter 1 sustaining effects.

Correlation coefficients were computed for reading group placement and selected demographic variables and reported in Table 33. It was found that there was a significantly high correlation between reading group placements as students moved from grade to grade. Chapter 1 participation, sex (boys), and low socioeconomic status were also significantly correlated with lower reading group placement. Only age and family status were not correlated with reading group placement.

As reported in Table 34, analysis of variance was also used to examine reading group placement on the basis of Chapter 1 participation at the end of fourth grade. Fourth grade was selected because (a) it was the last year for which data was available and (b) because it was the last grade at which students were grouped for reading instruction, thereby providing the best estimate of reading group placement as an "exit" outcome for the reading program. Again, students were blocked into three groups on the basis of Chapter 1 participation to distinguish between

Table 33
Intercorrelations between Chapter 1 Participation, Selected Demographic Variables, and Reading Group Placement

Variable	Reading Group Placement by Grade Level[a]			
	1	2	3	4
Grade 1 Reading Group	--	.68**	.77**	.68**
Grade 2 Reading Group		--	.86**	.92**
Grade 3 Reading Group			--	.82**
Total years in Chapter 1	.27	.71**	.59**	.76**
Ever in Chapter 1	.27	.73**	.61**	.70**
Chapter 1 code[b]	.25	.71**	.59**	.74**
Age[c]	.05	-.07	-.00	.13
Sex[d]	.26	.31*	.42**	.32*
Socioeconomic status[e]	.34*	.23	.32*	.30*
Family Code[f]	.11	.09	.20	.18

[a] At grade one reading groups were 1 = above average, 2 = average, 3 = below average. At grades two through four 1 and 2 = above average, 3 and 4 = average, and 5, 6, and 7 = below average.
[b] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).
[c] Age was the number of months at the time the ITBS was administered in grade five.
[d] Sex was defined as 0 = female and 1 = male.
[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.
[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

*$p < .05$ **$p < .01$

Table 34

Analysis of Variance of Grade Four Reading Group Placement and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Group	99.56	2	49.78	29.35	.0000
Within	83.12	49	1.70		

Table of Means and Standard Deviations

Subgroup	Mean	*SD*	*n*
No Chapter 1	2.21	1.39	33
Primary	4.13	.99	8
Intermediate	5.55	1.21	11
Entire Sample	3.21	1.21	52

Comparison of Means

Subgroups Compared	Difference	*t*	*df*	*p*
No Chapt.1 - Primary	-1.91	-1.913	49	.0007
No Chapt.1 - Intermed.	-3.33	-7.351	49	.0000
Primary - Intermed.	-1.42	-2.347	49	.0217

Note. *t* based on pooled variance estimates. The higher the reading group, the lower the instructional level.

those who never received Chapter 1 service, those served only in the primary grades, and those receiving service in the intermediate grades. In terms of reading group placement at the end of fourth grade, neither the primary nor the intermediateChapter 1 groups were able to close the gap with the non-Chapter 1 students.

In addition to analysis of variance, crosstabulations were performed on the basis of Chapter 1 participation and reading group placement at the end of grade four. Reported in Table 35 and Graph 11, the results showed that students served by Chapter 1 in the primary grades were placed in reading groups which were at or within one year of the publishers determined "average grade level." The students in the intermediate Chapter 1 group were all placed in reading groups which were at least one semester below this "average grade level" or had been placed in a separate remedial reading series.

Chapter 1 participation and success in the regular program as measured by voluntary student reading. A successful reading program should included among its goals the statement that students will not only understand what they read (comprehension) but will show evidence of reading for enjoyment (voluntary reading). One measure of voluntary reading used in this study was the number of books a student checked-out from the library. A second measure of voluntary reading was participation in reading motivation programs. Both measures were considered important indicators of regular program outcomes.

Programs to motivate students to read outside of the school day have been implemented at Briggs. Beginning when the students in this sample were in second grade, students were offered extrinsic rewards for reporting the number of pages they had read.

Table 35

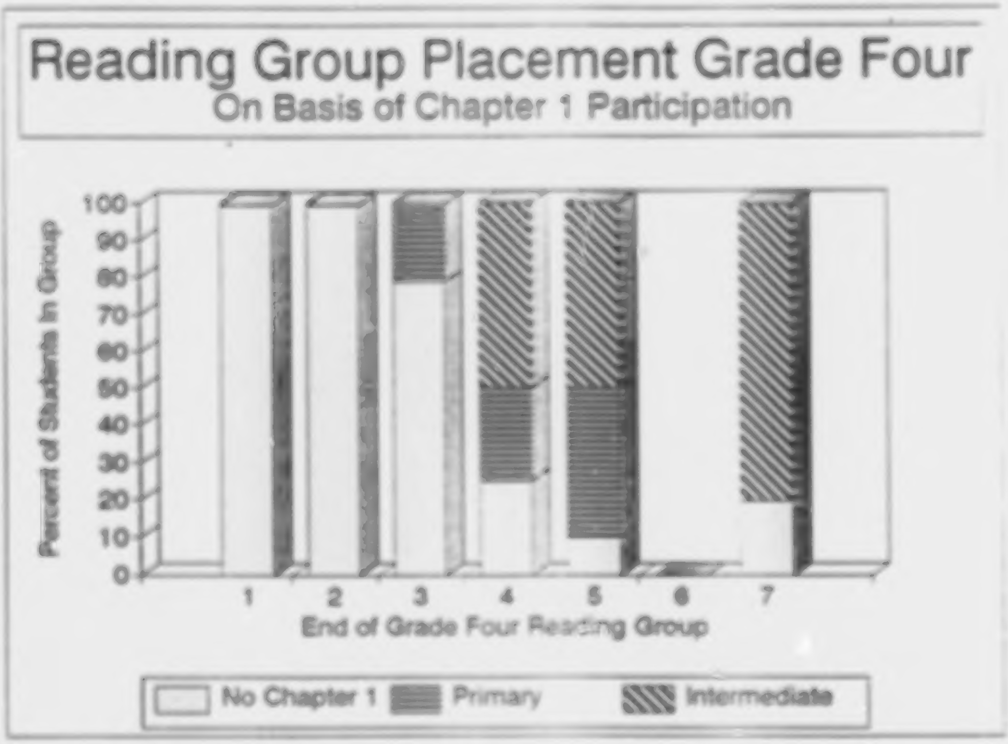
Crosstabulation of End of Grade Four Reading Group Placement and Chapter 1 Participation

Participation Group	End of Grade Four Reading Group Placement 1	2	3	4	5	6	7
No Chapter 1	14 27%	5 10%	11 21%	1 2%	1 2%	0 0%	1 2%
Primary Only	0 0%	0 0%	3 6%	1 2%	4 8%	0 0%	0 0%
Intermediate	0 0%	0 0%	0 0%	2 4%	5 10%	0 0%	4 8%

Chi-square = 40.30 *df* = 12 p = .0001

Note. Based on comparisons within the sample, groups 1 and 2 were above average, groups 3 and 4 were average, and groups 5, 6 and 7 were below average. Based on publishers recommended levels, groups 1 and 2 were above level, group 3 was 2 months behind, groups 4 was 1 semester behind, and group 5 was 2 semesters behind the average pace. Group 7 was a separate group which used an alternative reading program intended for low achieving students.

Graph 11
Graph of Reading Group Placement at the End of Grade Four on the Basis of Chapter 1 Participation Group



As students reported the pages they had read, for every 300 pages they moved their name marker on a 30 foot long bulletin board in the hallway near the library and received a prize such as a pencil or bookmark. This program was modified when this sample group entered fifth grade. Instead of reporting pages read in 300 page units, the students were challenged to report a minimum of 250 pages each month. Rather than recording the number of 300 page units reported, the librarian recorded the number of months a student reached the goal.

Since its inception, the Chapter 1 teachers had supported this building-wide recreational reading program by offering extrinsic rewards in the form of pizza lunches or ice cream cones during six week long motivational campaigns each fall and spring. In addition to daily encouragement to read at home and to assist students in reporting pages read, Chapter 1 teachers encouraged students to use books kept in the Chapter 1 area which featured "high interest, low vocabulary" texts.

In this study four measures of participation in recreational reading were made: (a) number of 300 page units of reading reported during fourth grade, (b) number of books checked out during fourth grade, (c) number of months during the fall of fifth grade when the student reported reading 250 pages or more, and (d) number of library books the student checked out during the fall of fifth grade. All of these measures were based on data routinely kept by the librarian and none were taken specifically for this study.

Correlation coefficients were calculated for these four recreational reading variables and reported in Table 36 where it was evident that library circulation at grades four and five were positively correlated with each other. However, neither was significantly correlated with measures of reported reading.

inversely parallel, reported reading at grades four and five were significantly correlated but not with library circulation.

Increased participation in Chapter 1 tended to correlate negatively with measures of voluntary reading. In analyzing demographic variables, it was found that older students, boys, and students from low socioeconomic status families appeared to have lower rates of participation in voluntary reading that did their counterparts. Unexpectedly, it appeared that students from non-traditional families reported higher rates of voluntary reading on each measure except grade five reported reading.

An analysis of variance of Chapter 1 participation and these variables failed to identify any significant differences on the basis of Chapter 1 participation and therefore was not detailed in this report.

Chapter 1 participation and success in the regular program as measured by student attitudes towards reading. Because a positive attitude towards reading was a desired outcome of the reading program in general and Chapter 1 in particular, it was appropriate to examine the Chapter 1 impact upon this variable. McKenna and Kear (1990) developed an instrument to measure student attitudes towards reading which was administered to all students at Briggs school in September of 1990 as part of a separate study. This attitude survey provided two measures: attitude toward recreational reading and attitude toward academic reading.

Correlation coefficients, which were calculated for these measures of attitude toward reading and selected demographic variables, were reported in Table 37. It was noted that many of the demographic variables were negatively correlated with attitude towards recreational reading, but that this was statistically significant only on the variable of sex. Thus girls had a more positive attitude towards recreational reading than boys. The

Table 36

Intercorrelations between Chapter 1 Participation, Selected Demographic Variables, and Student Participation in Voluntary Reading[a]

Variable	Library Circulation		Reported Reading	
	Grade 4	Grade 5	Grade 4	Grade 5
Grade 4 Lib. Circulation	--	.41**	.21	.04
Grade 5 Lib. Circulation		--	.03	.02
Grade 4 Reported Reading			--	.61**
Grade 5 Reported Reading				--
Total years in Chapter 1	-.15	-.10	-.10	-.26
Ever in Chapter 1	-.03	.10	-.09	-.33**
Chapter 1 code[b]	.07	.07	-.13	-.29
Age[c]	.15	-.04	-.13	-.12
Sex[d]	-.23	-.17	-.44**	-.21
Socioeconomic status[e]	-.12	.10	-.11	-.19
Family Code[f]	.18	.11	.11	-.03

[a] Participation in voluntary reading programs using data routinely gathered by the librarian.

[b] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[c] Age was the number of months at the time the ITBS was administered in grade five.

[d] Sex was defined as 0 = female and 1 = male.

[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

$*p < .05$ $**p < .01$

Table 37

Intercorrelations between Chapter 1 Participation, Selected Demographic Variables, and Student Attitudes Towards Reading[a]

Variable	Attitude Towards Reading	
	Recreational	Academic
Recreational	--	.67**
Academic		--
Total years in Chapter 1	-.18	-.08
Ever in Chapter 1	-.19	.10
Chapter 1 code[b]	-.22	.09
Age[c]	-.14	.04
Sex[d]	-.33*	-.25
Socioeconomic status[e]	-.18	.06
Family Code[f]	.23	.28*

[a] Attitude towards reading measured using instrument developed by McKenna and Kear (1990).

[b] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[c] Age was the number of months at the time the ITBS was administered in grade five.

[d] Sex was defined as 0 = female and 1 = male.

[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

$^{*}p < .05$ $^{**}p < .01$

exception to the pattern of negative correlations was on the basis of family status where students from non-traditional families had more positive attitudes towards reading than did students from traditional families. The positive correlation with family status was significant on the measure of attitude toward academic reading.

An analysis of variance was computed for each of the measures of reading attitude. The results showed there were no significant differences between the means of either measure of attitude toward reading on the basis of the degree of participation in Chapter 1 and therefore were not detailed in this report.

Chapter 1 participation and success in the regular program as measured by grade point averages in social studies and science. Success in the regular academic program of the school is another desirable outcome of participation in Chapter 1. In this studyreport card grades in social studies and science were used as indicators of success in the regular program. These content areas were selected because (a) there was no grouping for instruction on the basis of ability or achievement and (b) all students within the class were graded on the same criteria. Because report card grades using the traditional A - F scale were used only in grades three and four, the social studies and science grades at these two levels were examined for evidence of Chapter 1 effects.

First, correlation coefficients between social studies and science grade point averages and Chapter 1 participation and various demographic variables were computed. As reported in Table 38, the results clearly indicated that the more a student participated in Chapter 1, the more likely the student would have a lower grade point average in social studies and science classes in both grades three and four.

Beyond Chapter 1 participation, it was also clear that students who came from low socioeconomic homes also experienced less success in these regular program courses. In grade three the negative correlations were statistically significant while in grade four only the science GPA failed to reach statistical significance. Correlations between GPA and age and family status failed to reveal any patterns. Although not significant on any measure of GPA, sex consistently had negative correlations which indicated that boys tended to have lower grades than girls.

Second, analysis of variance was performed to see if there were evidence to show that participation in Chapter 1 in the primary grades only would be reflected in grade point averages for grade three and four social studies and science courses. The analysis of variance data reported in Tables 39 - 42 was summarized in Table 43 and illustrated in Graph 12. Although there was a significant difference between those who never received Chapter 1 service and those who received it only in the primary grades on the grade three grade point averages for social studies and science, by fourth grade this group had "closed the gap" in both subject areas.

The students who continued to receive Chapter 1 service in the intermediate grades failed to "close the gap" and were significantly different from the non-Chapter 1 students at the on all four measures.

Because success in the regular program was defined as a grade point average of 2.0 or higher in social studies and science at grades three and four, it was important to note that all three groups were termed successful on all four measures with the exception of the intermediate group which only reached a GPA of 1.70 in fourth grade science.

Table 38

Intercorrelations between Chapter 1 Participation, Selected Demographic Variables, and Grade Point Averages in Social Studies And Science at Grades Three and Four

Variable	Grade Point Average[a]			
	Grade Three		Grade Four	
	SS	SCI	SS	SCI
Grade 3 Social Studies	--	.64**	.59**	.62**
Grade 3 Science		--	.57**	.54**
Grade 4 Social Studies			--	.79**
Grade 4 Science				--
Total years in Chapter 1	-.43**	-.50**	-.46**	-.41**
Ever in Chapter 1	-.51**	-.60**	-.46**	-.45**
Chapter 1 code[b]	-.48**	-.59**	-.52**	-.52**
Age[c]	-.07	.13	-.06	-.08
Sex[d]	-.16	-.07	-.19	-.20
Socioeconomic status[e]	-.37**	-.27*	-.29*	-.16
Family Code[f]	.05	-.07	.05	-.01

[a] Grade point average based on traditional letter grades of A - F which were computed on a four point scale.

[b] Chapter 1 code was defined as 0 = never participated,
1 = participated in primary grades (one or two) only, and
2 = participated in intermediate grades (three, four, or five).

[c] Age was the number of months at the time the ITBS was administered in grade five.

[d] Sex was defined as 0 = female and 1 = male.

[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

*$p < .05$ **$p < .01$

Table 39

Analysis of Variance of Grade Three Social Studies Grade Point Average and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Group	4.69	2	2.35	8.42	.0010
Within	13.38	48	.28		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	3.15	.57	33
Primary	2.53	.29	7
Intermediate	2.50	.49	11
Entire Sample	2.92	.60	51

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	.62	2.808	48	.0071
No Chapt.1 - Intermed.	.65	3.512	48	.0013
Primary - Intermed.	.03	.112	48	.8765

Note. *t* based on pooled variance estimates.

Table 40

Analysis of Variance of Grade Three Science Grade Point Average and Chapter 1 Participation

Effect	SS	df	MS	F	p
Group	15.44	2	7.72	13.74	.0008
Within	26.97	48	.56		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	3.23	.76	33
Primary	2.21	.76	7
Intermediate	2.00	.71	11
Entire Sample	2.82	.92	51

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	1.01	3.247	48	.0024
No Chapt.1 - Intermed.	1.23	4.702	48	.0001
Primary - Intermed.	.21	.591	48	.5640

Note. *t* based on pooled variance estimates.

Table 41
Analysis of Variance of Grade Four Social Studies Grade Point Average and Chapter 1 Participation

Effect	SS	df	MS	F	p
Group	9.32	2	4.66	9.02	.0007
Within	24.80	48	.52		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	3.21	.76	33
Primary	2.86	.66	7
Intermediate	2.15	.61	11
Entire Sample	2.93	.83	51

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	.35	1.166	48	.2477
No Chapt.1 - Intermed.	1.06	4.238	48	.0002
Primary - Intermed.	.71	2.048	48	.0434

Note. t based on pooled variance estimates.

Table 42

Analysis of Variance of Grade Four Science Grade Point Average and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Group	8.62	2	4.31	9.07	.0007
Within	22.83	48	.48		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	2.72	.74	33
Primary	2.40	.46	7
Intermediate	1.70	.62	11
Entire Sample	2.45	.79	51

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	.32	1.109	48	.2724
No Chapt.1 - Intermed.	1.02	4.252	48	.0002
Primary - Intermed.	.70	2.108	48	.0379

Note. *t* based on pooled variance estimates.

Table 43

Summary of t-Test Comparisons of Social Studies and Science Grade Point Averages at Grades Three and Four and Participation in Chapter 1

Subgroups Compared	Grade Point Average			
	Grade Three		Grade Four	
	SS	SCI	SS	SCI
No Chapt. 1 vs. Primary	**	**	--	--
No Chapt. 1 vs. Intermed.	**	**	**	**
Primary vs. Intermed.	--	--	*	*

$^{*}p < .05$ $^{**}p < .01$

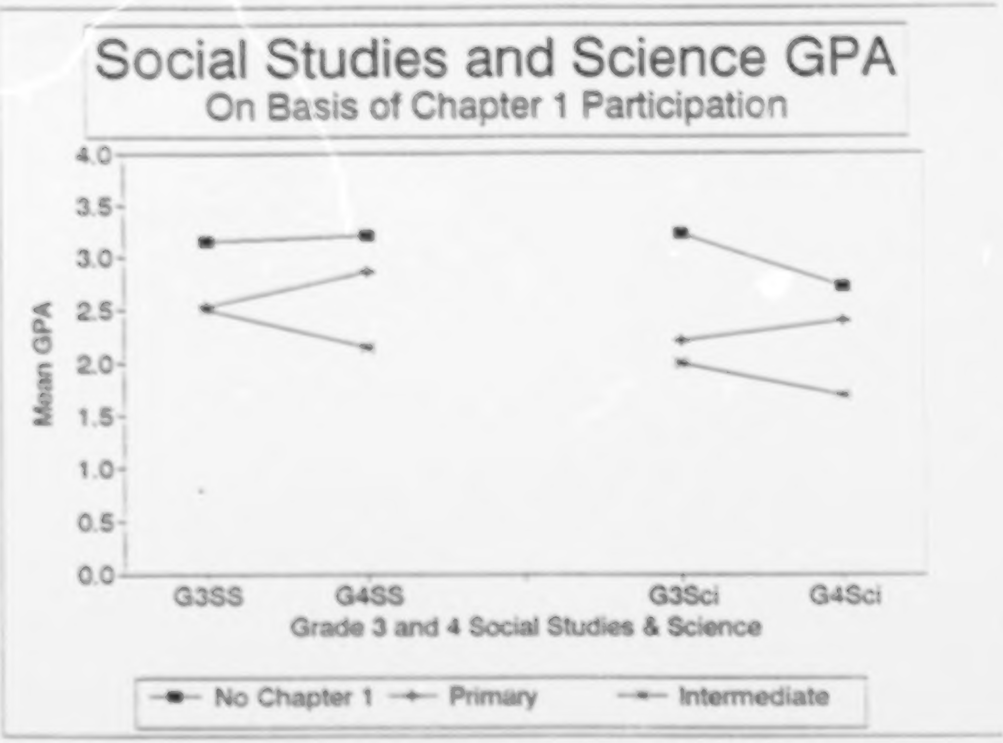
Table of Means of Social Studies and Science GPAs

Grade and Subject	Category of Chapter 1 Participation		
	No Chapter 1	Primary	Intermediate
Grade 3 Social Studies	3.15	2.53	2.50
Grade 3 Science	3.23	2.21	2.00
Grade 4 Social Studies	3.21	2.86	2.15
Grade 4 Science	2.72	2.40	1.70

Note. All groups achieved at a successful level (GPA average of 2.0 or higher) on all measures except the intermediate group which had an average GPA of 1.7 in science at fourth grade.

Graph 12

Graph of Social Studies and Science Mean Grade Point Averages on the Basis of Chapter 1 Participation Group



Chapter 1 participation and success in the regular program as measured by teacher judgments of work habits and attitudes. In this section the question of Chapter 1 effects upon teacher judgments of work habits and attitudes was examined. At each level, teachers evaluated students on the basis of work habits and attitudes and recorded these judgments on report cards (see appendix). Although each grade used a different marking scale for reporting these judgments, it was possible to construct a mathematical index appropriate for each level. At first grade, "satisfactory" was assigned a value of 3, "improving" was assigned a value of 2, and "needs improvement" was assigned a value of 1. At second grade, "satisfactory" was assigned a value of 1 and "needs improvement" was assigned a value of 0. At grades three and four, "satisfactory" was assigned a value of 2, "needs improvement" was assigned a value of 1, and "unsatisfactory" was assigned a value of 0. Therefore, at each grade level the higher the index, the higher the teacher rating of the student's behavior.

Correlation coefficients were calculated for the measures of work habits and attitudes and various demographic variables. As reported in Table 44, there were negative correlations between participation in Chapter 1 and teacher judgments of work habits and attitudes which were significant at grades three and four. Thus, the more a student received Chapter 1 service, the lower the teacher rating, especially in the intermediate grades. This trend was also evident for students from low socioeconomic homes whose teachers also tended to rate their behavior lower at all grade levels although significant only at grades two and four.

Analysis of variance was conducted to determine if there were sustaining effects of Chapter 1 participation manifest in the teacher judgments of work habits and attitudes. At grades one

Table 44

Intercorrelations between Chapter 1 Participation, Selected Demographic Variables, and Teacher Judgments of Work Habits and Attitudes

Variable	Work Habits/Attitudes by Level[a]			
	1	2	3	4
Grade 1 Work Habits/Attitudes	--	.41**	.35*	.16
Grade 2 Work Habits/Attitudes		--	.68**	.50**
Grade 3 Work Habits/Attitudes			--	.58**
Grade 4 Work Habits/Attitudes				--
Total years in Chapter 1	.00	-.12	-.47**	-.35**
Ever in Chapter 1	.05	-.18	-.24	-.30*
Chapter 1 code[b]	.04	-.19	-.34*	-.40**
Age[c]	-.19	-.07	-.11	-.10
Sex[d]	-.20	-.04	-.19	-.24
Socioeconomic status[e]	-.22	-.39**	-.27	-.34*
Family Code[f]	-.06	-.04	-.09	-.19

[a] Work habits and attitudes index was different at different grade levels.

[b] Chapter 1 code was defined as 0 = never participated, 1 = participated in primary grades (one or two) only, and 2 = participated in intermediate grades (three, four, or five).

[c] Age was the number of months at the time the ITBS was administered in grade five.

[d] Sex was defined as 0 = female and 1 = male.

[e] Socioeconomic status was defined as 0 = full pay lunch and 1 = participated in free/reduced price lunch program.

[f] Family code was defined as 0 = traditional, both parents present and 1 = non-traditional.

*p< .05 **p< .01

and two there were no differences between the group which had never received Chapter 1 service, the primary group which received Chapter 1 service in grades one and two only, and the intermediate group which received Chapter 1 service in grades three, four, or five. However, at grades three and four the average work habits and attitudes index for the intermediate group was significantly lower than the averages of the other two groups. The results of the analysis of variance tests were reported in Tables 45 - 48 and summarized in Table 49 and illustrated in Graph 13.

Other Observations Based on the Results of this Study

Boys tended to be older than girls in this sample. The correlation between age and sex was .42 ($p < .01$).

Family status and socioeconomic status were closely linked as evidenced by a correlation of .35 ($p < .01$). It was noteworthy that the variable of family status was significantly correlated with no other variable in the study except attitude towards academic reading in which the correlation of .28 was significant ($p < .05$). In other words, students from non-traditional families were more likely to participate in the free/reduced lunch program and were more likely to have a more positive attitude towards academic reading than their peers from traditional families. However, membership in a non-traditional family was not related to achievement or other measures of school outcomes examined in this study.

There was no correlation between library circulation and participation in reading motivation programs. However, there was a significant correlation between sex and participation in the reading motivation program with girls reporting more voluntary reading than boys. Girls also had a significantly more positive attitude towards recreational reading than did boys.

Table 45

Analysis of Variance of Grade One Index of Work Habits and Attitudes and Chapter 1 Participation

Effect	SS	df	MS	F	p
Group	5.56	2	2.78	.04	.9458
Within	2561.60	41	62.48		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	114.0	8.80	26
Primary	114.8	7.76	8
Intermediate	114.7	4.76	10
Entire Sample	114.3	7.73	44

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	-.75	-.235	41	.80
No Chapt.1 - Intermed.	-.68	-.238	41	.76
Primary - Intermed.	.05	.013	41	.93

Note. t based on pooled variance estimates.

Table 46

Analysis of Variance of Grade Two Index of Work Habits and Attitudes and Chapter 1 Participation

Effect	SS	df	MS	F	p
Group	117.84	2	58.92	.88	.4232
Within	3068.65	46	66.71		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	30.03	7.92	30
Primary	28.25	6.88	8
Intermediate	26.27	9.59	11
Entire Sample	28.90	8.15	49

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	1.78	.549	46	.5923
No Chapt.1 - Intermed.	3.76	1.306	46	.1951
Primary - Intermed.	1.98	.521	46	.6109

Note. t based on pooled variance estimates.

Table 47

Analysis of Variance of Grade Three Index of Work Habits and Attitudes and Chapter 1 Participation

Effect	*SS*	*df*	*MS*	*F*	*p*
Group	379.40	2	189.70	4.76	.0127
Within	1951.12	49	39.82		

Table of Means and Standard Deviations

Subgroup	*Mean*	*SD*	*n*
No Chapter 1	37.33	4.61	33
Primary	38.13	3.56	8
Intermediate	30.91	10.87	11
Entire Sample	36.10	6.76	52

Comparison of Means

Subgroups Compared	*Difference*	*t*	*df*	*p*
No Chapt.1 - Primary	-.79	-.318	49	.7467
No Chapt.1 - Intermed.	6.42	2.924	49	.0053
Primary - Intermed.	7.22	2.461	49	.0165

Note. *t* based on pooled variance estimates.

Table 48
Analysis of Variance of Grade Four Index of Work Habits and Attitudes and Chapter 1 Participation

Effect	SS	df	MS	F	p
Group	1010.32	2	505.16	5.59	.0067
Within	4337.01	48	90.35		

Table of Means and Standard Deviations

Subgroup	Mean	SD	n
No Chapter 1	32.06	10.06	32
Primary	31.75	5.80	8
Intermediate	21.18	9.82	11
Entire Sample	29.67	10.34	51

Comparison of Means

Subgroups Compared	Difference	t	df	p
No Chapt.1 - Primary	.32	.083	48	.8936
No Chapt.1 - Intermed.	10.88	3.275	48	.0023
Primary - Intermed.	10.57	2.393	48	.0195

Note. t based on pooled variance estimates.

Table 49
Summary of t-Test Comparisons of Teacher Judgments of Work Habits and Attitudes and Participation in Chapter 1

Subgroups Compared	Work Habits and Attitudes by Grade 1	2	3	4
No Chapt. 1 vs. Primary	--	--	--	--
No Chapt. 1 vs. Intermed.	--	--	**	**
Primary vs. Intermed.	--	--	*	*

*p< .05 **p< .01

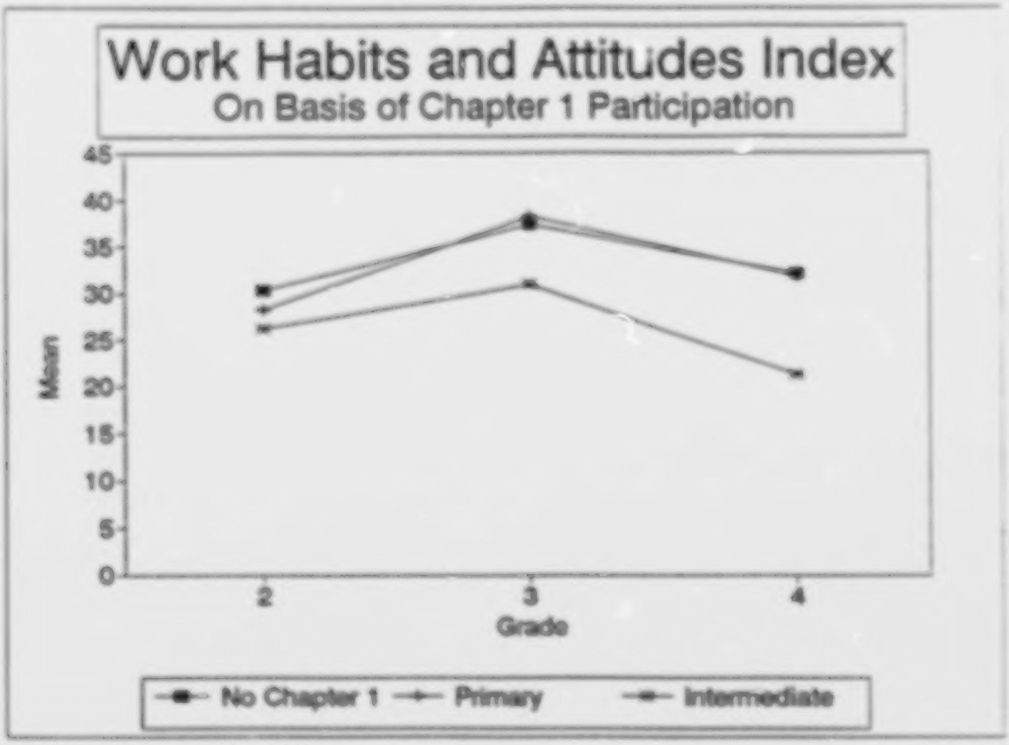
Table of Means of Work Habits and Attitudes Index

Grade	Category of Chapter 1 Participation: No Chapter 1	Primary	Intermediate
Grade 1	114.00	114.80	114.70
Grade 2	30.30	28.25	26.27
Grade 3	37.33	38.13	30.91
Grade 4	32.06	31.75	21.18

Note. A different index of work habits and attitudes was used at different grades. Only grades three and four use the same index.

Graph 13

Graph of Work Habits and Attitudes Index at Grades Two, Three, and Four on the Basis of Chapter 1 Participation



Summary

The results of this study were divided into two sections. First, there was a focus upon the results which described the students who received Chapter 1 services followed by an emphasis on measures related to the sustaining effects of Chapter 1 participation. This summary follows the order of the research questions posed in earlier chapters. Major findings are summarized below:

Question Number 1: What is the pattern of participation in the Chapter 1 program on a longitudinal basis from grade-to-grade?

The pattern of participation in the Chapter 1 program on a longitudinal basis from grade-to-grade revealed that service to Chapter 1 students was continuous rather than interrupted. Once placed in Chapter 1, students remained in the program until staffed or promoted out. Once out of the program, none subsequently returned. Further, it was found that participation was highest in the primary grades with fewer students receiving service in the intermediate grades.

Question Number 2: How do sex, socioeconomic status, or family status affect participation in the Chapter 1 program?

Participation in Chapter 1 was not significantly related to the demographic variables of sex, age, socioeconomic status, or family status. However, there were indications that boys and students from low socioeconomic families and/or non-traditional families were more likely to participate in Chapter 1 than their counterparts.

Question Number 3: How do sex, socioeconomic status, or family status affect participation in the Chapter 1 program when students are blocked into groups on the basis of (a) participation only in the primary grades or (b) participation in the intermediate grades?

Even when blocked into groups on the basis of participation in the Chapter 1 program (no Chapter 1, primary only, and intermediate groups), it was found that neither sex, socioeconomic status, nor family status were significantly related to receipt of Chapter 1 service. Although, as noted above, boys and students from low socioeconomic families and/or non-traditional families were more likely to have received Chapter 1 service, especially in the intermediate group, these results were not statistically significant.

Question Number 4: How do sex, socioeconomic status, or family status affect total years of participation in the Chapter 1 program when students are blocked into groups on the basis of (a) participation only in the primary grades or (b) participation in the intermediate grades?

Total years of participation in the Chapter 1 program was not significantly related to sex, socioeconomic status, or family status, even when students were blocked into groups on the basis of their participation in Chapter 1.

Question Number 5: What are the relationships between eligibility for participation in the Chapter 1 program and sex, socioeconomic status, and family status?

Eligibility for Chapter 1 service, based on scores from standardized reading tests, revealed that boys and students from low socioeconomic and/or non-traditional families were more likely to be eligible for service than their counterparts. However, none of these factors were significantly related to eligibility.

Question Number 6: What is the pattern of participation in the Chapter 1 program on the basis of eligibility for service from grade-to-grade?

The majority of students who were eligible for participation in Chapter 1 on the basis of standardized tests were actually served at the primary grades and in grade three, however in grades four and five relatively few of the eligible students participated. In addition, it was found that some students who were not eligible nevertheless received Chapter 1 service, especially in the primary grades.

Question Number 7: To what extent is mobility a factor in participation in the Chapter 1 program?

Within the context of this study, mobility was not a factor in participation in the Chapter 1 program because only students enrolled at Briggs in grades three, four, and five were included in the sample. Further, it was found that the majority of students in the sample (85 percent) had been enrolled continuously since first grade. (Beyond these limitations of this study, however, it was observed that incoming transfer students who were in need of Chapter 1 service received service.)

Question Number 8: What is the relationship between participation in the Chapter 1 program and intelligence as measured by standardized IQ tests?

IQ, as measured by the Cognitive Abilities Tests, was related to Chapter 1 participation in that students with lower IQ scores were more likely to receive more Chapter 1 service. That there was no significant difference between the no Chapter 1 group and the primary group on measures of IQ stood in sharp contrast to the consistently significant lower IQ scores of the intermediate group when compared with the other two groups.

Question Number 9: What is the relationship between participation in the Chapter 1 program and receipt of special education services?

There was no evidence for a significant relationship between Chapter 1 participation and subsequent placement in special education programs.

In addition to the questions relating to participation in Chapter 1, there was a focus upon the relationship between Chapter 1 participation and various outcome measures of success in the regular program. By concentrating on the group of students who received Chapter 1 services in grades one and two only (the primary group), it was possible to estimate the sustaining effects of Chapter 1 participation at that level by comparing their performance with that of students who had never received Chapter 1 service. Further, it was possible to compare those two groups with the group of students who received Chapter 1 service in the intermediate grades. Results of these comparisons are listed below:

Question Number 10: What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of attendance in grades Kindergarten through four?

There was no difference between the three Chapter 1 groups on the outcome measure of attendance in grades Kindergarten through four.

Question Number 11: What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of reading proficiency using standardized reading test scores in grades three, four, and five?

Using ITBS reading grade equivalent scores, it was found that there was no significant difference between the no Chapter 1 group and the primary group on the grade three and five testings, as would be expected if the sustaining effects of Chapter 1 participation "closed the gap." However, the intermediate group was significantly different from the other two groups on all administrations of these tests and thus there was no evidence for a "closing of the gap" for that group. Further, it was noted that the grade equivalent gains between the grade three and grade five testings were almost identical for the no Chapter 1 and primary groups.

Using NCE scores on reading tests administered at grades Kindergarten through five, it was found that the primary group scored significantly lower than the no Chapter 1 group during the primary grades when these students received Chapter 1 services. In the intermediate grades, however, the primary group showed evidence of sustaining effects at grades three and five in that there was no significant difference between their mean NCE score and that of the no Chapter 1 group. In contrast, the intermediate Chapter 1 group was significantly different from the no Chapter 1 group on all test administrations. It was also noted that, using NCEs, the primary and intermediate groups were not statistically different on all testings except at grade five.

Question Number 12: What are the sustaining effects of Chapter 1 participation in the primary grades on the outcome measure of reading proficiency as based on placement in regular education reading groups?

Reading group placement, another outcome measure of reading proficiency, showed that students in the Chapter 1 primary group were placed in reading groups at lower instructional levels than students in the no Chapter 1 group. Only no Chapter 1 group members were assigned to the above average groups (one and two). Primary only Chapter 1 participants were placed in groups three, four and five which ranged from average to below average within the context of the students in the sample. Intermediate Chapter 1 students were assigned to groups four and five (average and below average) as well as group seven which was below average and used instructional materials different from the regular reading program.

In contrast to the above, which used comparisons with other students in the fourth grade to determine average, use of the reading program publisher's grade equivalencies to determine average, revealed that the primary group students were at grade level or only slightly below.

Question Number 13: What is the relationship between Chapter 1 participation and the outcome measure of voluntary reading as based on participation in a recreational reading motivation program and library book circulation?

There was no evidence that participation in Chapter 1 was significantly related to measures of voluntary reading such as library circulation or participation in a reading motivation program.

Question Number 14: What is the relationship between Chapter 1 participation and the outcome measure of attitude towards reading?

As above, there was no evidence that participation in Chapter 1 was significantly related to measures of attitudes toward reading whether academic or recreational reading.

Question Number 15: What are the sustaining effects of Chapter 1 participation in the primary grades on success in the regular program as measured on the outcome of grade point average in social studies and science at grades three and four?

Another measure of success in the regular program, grades in science and social studies revealed that although the primary group had lower GPAs in social studies and science in grades three and four than the no Chapter 1 group, these differences were significant only at grade three. Thus by grade four, it appeared the primary group had closed the gap on this variable. On the other hand, the intermediate group not only showed a gap on this measure, the gap became greater between grade three and four.

Question Number 16: What are the sustaining effects of Chapter 1 participation in the primary grades on success in the regular program as measured on the outcome of work habits and attitudes as rated by teachers on student report cards?

Teacher ratings of work habits and attitudes, as recorded on report cards, showed there was no difference between the no Chapter 1 group and the primary group during grades one through four. As with the primary group, there was no difference on this outcome measure between the no Chapter 1 group and the intermediate group at grades one and two. However, the intermediate group was statistically different from the other two groups on this variable at grades three and four.

Table 50 provided a "summary of summaries" of the t-test comparisons of the outcome measures examined and reported above in this study. Dashes meant "no difference" or "no gap" between the groups compared on that variable while asterisks meant "significant difference" or "gap" between the groups on the respective variables. It was clearly evident that a pattern of no significant difference existed between the no Chapter 1 group and the primary group on most measures. On the other hand, the intermediate group was significantly different from the no Chapter 1 group on most of the variables studied.

Table 50

Summary of t-Test Comparisons of Chapter 1 Participation Groups on Selected Measures

Measure	No Chapter 1 Vs. Primary	No Chapter 1 Vs. Inter.	Primary Vs. Inter.
Grade 3 Verbal IQ	--	**	*
Grade 3 Quant. IQ	--	**	--
Grade 3 Non-V. IQ	--	**	--
Grade 5 Verbal IQ	--	**	--
Grade 5 Quant. IQ	**	**	--
Grade 5 Non-V. IQ	--	**	--
Attendance	--	--	--
Grade 3 ITBS Read. GE	--	**	--
Grade 4 ITBS Read. GE	*	**	--
Grade 5 ITBS Read. GE	--	**	--
Kind. Read. NCE	**	**	--
Grade 1 Read. NCE	**	**	--
Grade 2 Read. NCE	**	**	--
Grade 3 Read. NCE	--	**	--
Grade 4 Read. NCE	**	**	--
Grade 5 Read. NCE	--	**	--
Grade 4 Read. Group	**	**	*
Voluntary Reading			
Grade 4 Lib. Circ.	--	--	--
Grade 5 Lib. Circ.	--	--	--
Grade 4 Reported Read	--	--	--
Grade 5 Reported Read	--	--	--
Attitude Towards Reading			
Recreational Read.	--	--	--
Academic Reading	--	--	--
Grade Point Averages			
Grade 3 Social Stud.	**	**	--
Grade 4 Social Stud	--	**	*
Grade 3 Science	**	**	--
Grade 4 Science	--	**	*
Work Habits & Attitudes			
Grade 1	--	--	--
Grade 2	--	--	--
Grade 3	--	**	*
Grade 4	--	**	*

*p< .05   **p< .01

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This study was undertaken (a) to evaluate the sustaining effects of Chapter 1 participation on students at Briggs Elementary School and (b) as a pilot study for the establishment of a district-wide evaluation of the Chapter 1 program. This chapter will begin with a three part discussion of the results of the study in terms of the demographic characteristics of Chapter 1 participants, in terms of the evidence for sustaining effects of Chapter 1 participation, and in terms of the lessons learned from this study which would be applicable to a district-wide evaluation system. This will be followed by a summary of the conclusions of the study and recommendations for further research and program improvement.

Results Which Describe the Characteristics of Students Receiving Chapter 1 Service

Patterns of participation in Chapter 1. A pattern of participation in Chapter 1 during alternating years as reported by Kirshstein (1987), Bellew (1987), and Carter (1984) was not evident in this study. Once students had been staffed or promoted out of Chapter 1, they did not subsequently again participate in the Chapter 1 program. This indication of program success is not diminished by the fact that there was a deliberate attempt to concentrate Chapter 1 services in the primary grades. On the contrary, because the members of the primary group were able to "close the gap" with the non-Chapter 1 students on outcome measures during the intermediate years, there was no need for them to again receive service. The members of the intermediate group, however, were not able to "close the gap" and therefore continued to receive Chapter 1 services.

Participation in Chapter 1 and selected demographic characteristics of students. Although more boys than girls participated in Chapter 1, the fact that statistical tests for the role of sex as a factor in the receipt of Chapter 1 services were all non-significant was a strong indication there was no bias on the basis of sex in selection for Chapter 1 participation. This was a noteworthy result.

It was expected that socioeconomic status would be a factor in receipt of Chapter 1 services. This was based on the theory that economic disadvantagement causes students to achieve poorly on measures of academic achievement and therefore low socioeconomic students would be significantly represented on the Chapter 1 rosters. Such was not the case in this study. However, the data which linked Chapter 1 participation and socioeconomic status indicated that a higher percentage of low socioeconomic students received Chapter 1 service than did high socioeconomic students. The fact that this was not statistically significant was deemed an indication of success for the regular educational program.

Based on the assumption that students who come from non-traditional families would show greater educational needs and therefore greater participation in the Chapter 1 program, the fact that the data did not confirm this was again seen as a positive reflection on the regular education program.

Eligibility for Chapter 1 service and selected demographic variables. In the discussion above, demographic variables were examined in isolation as a function of actual participation in the Chapter 1 program. However, eligibility for Chapter 1 service was a separate question, and it was found that demographic variables were related to eligibility. At every grade level the number of girls eligible for Chapter 1 service was consistently less than the number of girls not eligible. Beginning with the grade three testing, more boys were eligible than not eligible for Chapter 1 service. Although these results were not statistically significant, this pattern of lower achievement by boys was a source of concern.

The role of socioeconomic status on eligibility for Chapter 1 service was explored and found not to be a significant factor in eligibility. However, it was noted that at all grade levels (except grade two), the majority of the low socioeconomic students was consistently categorized as eligible. This was in sharp contrast to the pattern for the group of high socioeconomic students in which the majority was consistently not eligible for Chapter 1 service.

When family status was examined as a factor in eligibility for Chapter 1 service at each grade level, it was found that family status did not play a significant role in student eligibility for service. However, further examination may be worthwhile because at grades four and five more students from non-traditional families were eligible than not eligible for Chapter 1 service.

To conclude this section it was appropriate to remember that the Chapter 1 program was intended to meet the special educational needs of students due to economic disadvantagement. Therefore, it was appropriate to examine Chapter 1 participation on the basis of demographic factors such as sex, socioeconomic status, and family status. In theory, the only demographic variable expected to be a significant factor in Chapter 1 participation should be socioeconomic status with low socioeconomic status students more likely to be eligible for and also to receive Chapter 1 services.

However, using both Chi-square tests and correlation coefficients, it was found that neither socioeconomic status, sex, nor family status were statistically significant factors in eligibility or participation in the Chapter 1 program. However, the data hinted that males and students from low socioeconomic and non-traditional families may have greater educational needs (based on higher rates of eligibility for Chapter 1 service), a trend which could be examined more thoroughly in future studies.

Participation in Chapter 1 and IQ. The results of the administrationS of the Cognitive Abilities Tests (CAT) were negatively correlated with the three measures of Chapter 1 participation: total years in Chapter 1, ever in Chapter 1, and Chapter 1 participation group (no Chapter 1, primary, intermediate). The fact that these negative correlations were, with one exception, all significant at the .05 level or less highlights the strength of this relationship. These results indicate that the lower a student's IQ, the more the student participated in Chapter 1.

As show with correlation coefficients, the pattern of IQ test scores based upon Chapter 1 participation consistently revealed that the mean IQ for each of the groups declined with increasing participation in Chapter 1. The no Chapter 1 group always had the highest mean IQ, the primary Chapter 1 group had a lower mean IQ, and the intermediate Chapter 1 group had the lowest mean IQ. Based on the results of this study, it was evident that there was no significant difference between the no Chapter 1 group and the primary group on all IQ measures except the grade five quantitative subtest. If the assumption were valid that in grades one and two there were significant differences between these groups, "no difference," at grades three and five provided evidence for a positive effect of Chapter 1 participation on IQ for the primary group. However, because there were no IQ measures prior to grade three, it was impossible to confirm this. Again, there appeared to be a need for further research on the relationship between Chapter 1 participation and IQ.

Additionally, these results exhibit the existence of a significant difference between students who received Chapter 1 service only in the primary grades and those who also received service in the intermediate grades. This suggests that students who receive Chapter 1 service into the intermediate grades have significantly lower IQs and greater educational needs which make them different from the rest of the students in the sample. If this is correct, it would not only indicate a need for different and more effective programming for this group of students but it may also be the most important practical implication of this study.

At grade five the students were older and had more experience with multiple choice machine scorable tests. Therefore, it was expected that the IQ scores would increase between the grade three and five testings. In fact, the IQ scores did increase between the grade three and grade five testing for all groups on both the verbal and quantitative tests. However, the decline in IQ score on the non-verbal test for the no Chapter 1 and primary groups was unexpected and unexplained except by "regression toward the mean." Only the intermediate group showed an increase in IQ score on the non-verbal test between grades three and five.

Age, as measured by months at the time of the fifth grade ITBS administration, correlated negatively at the .01 level with all the CAT scores except the grade five non-verbal IQ. Because age was a function of retention or being held out of school prior to Kindergarten, it may be that students with lower IQ scores were more likely to have been retained or held out prior to Kindergarten. Because this issue was beyond the scope of this study, it leaves open the opportunity for further examination of the impact of age in relationship to retention and success on measures of regular program outcomes.

Socioeconomic status was significantly correlated with the non-verbal IQ scores at both grades three and five. This showed low socioeconomic status students had lower non-verbal IQ scores than high socioeconomic status students. It was no surprise that students from low socioeconomic homes scored lower on all CAT tests than did their counterparts. Reasons for the consistency of this relationship needs to be explored further.

Participation in Chapter 1 and placement in special education services. Because all statistical tests of the relationship between Chapter 1 service and placement in special education services were non-significant, it was assumed that Chapter 1 service had no effect upon subsequent placement in the Learning Disabilities or Speech/Language programs. However, the sample available at Briggs may have been inadequate to evaluate this question because only students served by the Learning Disabilities and Speech/Language programs remained at Briggs. Students eligible for other special education programs, such as Mental Disabilities, were assigned to another building in the district and were not in the sample.

Results Relating to Chapter 1 Participation in the Primary Grades only as a Basis for Evaluation of The Sustaining Effects of Chapter 1

The group of students who received Chapter 1 services only in the primary grades became the focus of the sustaining effects evaluation reported in this study because (a) this group of students had been staffed out at the end of grades one or two, (b) they received no further Chapter 1 assistance, and (c) their success in regular education program at grades three, four, and five could be compared with that of students never served by Chapter 1. In addition, if the reading problems of this group had been "remediated," then it would be expected that the primary group would not be significantly different from students who had never received Chapter 1 help when compared using standardized measures of achievement and regular education program instructional outcomes at grades three, four, and five. Viewed from another perspective, it was predicted that the primary group would manifest sustaining effects of Chapter 1 participation which "closed the gap" between Chapter 1 participants and non-participants.

Chapter 1 participation and attendance as measured by total days absent in grades Kindergarten through four. Because there were no significant relationships between attendance and any of the variables examined in this study, it could be concluded that Chapter 1 participation had no measurable impact upon attendance. This confirms the expected results based on district practice to monitor attendance of all students, not just those in Chapter 1, and to actively intervene in all cases in which poor attendance was evident.

Chapter 1 participation and gains on standardized reading tests as measured using grade equivalent scores (Iowa norms). The negative correlations between the measures of Chapter 1 participation and scores on the ITBS reading tests at grades three, four, and five were as expected. This means greater participation in Chapter 1 was associated with lower achievement in reading. Because students with the "greatest need" received priority in receipt of Chapter 1 service, this was in accordance with program requirements.

The negative correlations between sex and ITBS scores indicated that girls scored higher than boys, significantly so at grades four and five. Although this was not a desired result, it was as expected and provided statistical evidence to suggest that the reading program contained aspects which were biased in favor of girls and/or did not meet the needs of boys. It would be an indication of success for the regular program if correlations between program outcomes and sex were non-significant.

The correlations associated with socioeconomic status indicated that students in the low socioeconomic group (free/reduced price lunch) scored lower than the high socioeconomic group, a result consistent with expectations. Although the correlations were significant at grades three and four, the fact that by fifth grade the correlations were not significant may have been an indication that the total building program (including Chapter 1) was able to overcome the negative effects of low socioeconomic status on achievement as students moved through grades three and four.

Evidence for sustaining effects of Chapter 1 was found using analysis of variance tests of the mean ITBS reading scores (GE, Iowa norms) of the three participation groups. The results supported the belief that Chapter 1 had helped "close the gap" between the primary and the no Chapter 1 groups. It was also evident that Chapter 1 had not "closed the gap" for the group served in the intermediate grades.

Chapter 1 participation and reading achievement gains as measured using Normal Curve Equivalents (National and Iowa norms). One benefit from an ex post facto approach is the ability to examine data for factors which can indicate possible preventative interventions. Would it be possible to use Kindergarten and first grade reading scores for this purpose? As expected, both Kindergarten and first grade reading test scores correlated significantly with reading scores at the other grade levels and with total years of Chapter 1 participation. But can Kindergarten and first grade reading tests be used to distinguish between the mild and the more severely disadvantaged (the primary and intermediate groups)? Perhaps. At the Kindergarten level the scores did not distinguish between these two groups although any student with an NCE of 50 or lower should be watched. However, the linking of Kindergarten and first grade scores may serve as the "red flag of warning" in that the more disadvantaged showed a decline between Kindergarten and first grade testings, *in spite of Chapter 1 participation*. The mildly disadvantaged (perhaps because of Chapter 1) did not exhibit this decline. Further research which could help identify predictor variables to distinguish mildly from severely disadvantaged students during Kindergarten and first grade could make a significant contribution to an improved reading program.

Age in months was significantly correlated (negative) with only the Kindergarten reading test score. It was assumed this was because nine students in the sample were placed in a transition room following Kindergarten, a decision made concurrently with the Kindergarten testing. Although not significant, age was negatively correlated with other test scores, a possible indication that retention failed to result in improved achievement in later grades.

Sex was negatively correlated with all test scores and significantly so with the grade two and three tests. This indicated that there may have been a bias in the reading program which helped girls achieve better than boys and/or which failed to meet the needs of boys.

When examining the correlations between socioeconomic status and reading test scores, the desired results were not obtained. Although statistically significant only at grades two and three, the consistently negative correlations demonstrated that students from the higher socioeconomic group had higher reading test scores than the students from the lower socioeconomic group. However, the fact that statistically there was "no difference" on these test score correlations except at grades three and four may suggest that the total reading program, including Chapter 1, had been able to reduce some of the negative effects of low socioeconomic status upon student achievement. (If the correlations had been statistically significant, this would have been an indication of abject failure on the part of the reading program to meet the educational needs of low income students.)

Do these results demonstrate that participation in Chapter 1 helps "close the gap" between disadvantaged and non-disadvantaged students? Yes. The results of the analysis of variance, as summarized in Table 32, showed that students who received Chapter 1 service only in the primary grades were able to "close the gap." However, the more severely disadvantaged, who also received Chapter 1 service in the intermediate grades, were not able to "close the gap." In addition, the significant difference between the no Chapter 1 group and the primary group at grades Kindergarten, one, and two confirmed the assumption that at these levels all Chapter 1 students were different from non-Chapter 1 students. Thus, the changes evident in the primary group during the intermediate grades may be the best evidence for the sustaining effects of Chapter 1 participation found in this study.

Based on the Chapter 1 evaluation model which calls for either a gain or no loss in NCE units between testings to demonstrate the positive effects of Chapter 1, the fact that the intermediate group showed steady declines on the grade one, two, and three testing showed that Chapter 1 failed to achieve even this minimal goal for these students. However, because no losses were evident on the grade four and five testing may provide evidence that Chapter 1 had a positive effect for this group at those levels, although not sufficient to "close the gap."

Since it was only the primary group which was able to "close the gap," there was a need for an explanation for why the intermediate group was unable to replicate this accomplishment. One possible explanation was found in the IQ scores. When compared with the no Chapter 1 group, only the intermediate group exhibited significantly lower IQ scores on the verbal and quantitative tests administered at grade three. This result leads to two implications for the Chapter 1 program. One implication is the apparent the need for a verbal IQ score for all students at an earlier age which would provide an additional "early warning" sign to strengthen the predictive pattern noticed in the reading test scores. Another implication of this may be a need to revise the Chapter 1 program at grades one and two to better meet the needs of low IQ students by providing instruction designed to improve their verbal and thinking competencies.

To summarize this section, by comparing the average NCE scores on standardized reading tests administered in grades Kindergarten through five, it was possible to identify positive Chapter 1 effects for students while being served. Also, using reading test results in grades three, four, and five, it was possible to identify sustaining effects for the group served by Chapter 1 only in the primary grades in that this group was able to "close the gap" with their no Chapter 1 peers. The group of students served by Chapter 1 in the intermediate grades, however, was unable to demonstrate positive Chapter 1 treatment effects until the grade four and five testings and then only because achievement scores ceased to decline. Unlike the primary group, the intermediate group was unable to close the achievement gap and there exists a need for further research to explore the causes for the difference in achievement between these two groups. It was also found that it was possible to use the reading test scores at Kindergarten and grade one to "flag" severely disadvantaged students based on the decline in NCE scores between Kindergarten and grade one testing in spite of Chapter 1 participation. Because the IQ tests administered in grade three also "flagged" these students as being significantly lower in IQ than their peers, it was suggested that IQ tests be administered at an earlier age to assist in this "early warning" process and to develop instructional programs which strengthen verbal competencies for these students.

Chapter 1 participation and success in the regular program as measured by reading group placement. It was found that there was a high correlation between reading group placement as students moved from grade-to-grade. This clearly indicated that once placed in a reading group, students rarely moved to a different group. This lack of mobility raised a concern related to the traditional practice of dividing students into homogeneous groups for reading instruction because, once grouped, student exposure to reading skills is constrained by the level of the group. In addition, those students who did gain in proficiency as readers were unable to move up because there was "no room" for them in the higher groups. These data served to support a district decision to abandon leveled homogeneous grouping for reading instruction which took effect as these students entered fifth grade. It is possible that these data represent the "last hurrah" of the old reading program and as such may serve as a bench mark for comparison in future evaluation studies of the new reading program.

Returning to the other patterns evident in these data, it would be assumed that a desired outcome for a reading program would include non-significant correlations between reading group placement and age, sex, socioeconomic status, and family code. The actual results were that Chapter 1 participation, sex, and socioeconomic status were significantly correlated with lower reading group placement. This meant Chapter 1 students, boys, and students from low socioeconomic families were more likely to be placed in the below average reading groups.

Although analysis of variance indicated a relationship between reading group placement and Chapter 1 participation, it was insufficient to clarify the nature of this relationship. Therefore, a crosstabulation was performed to more precisely locate the reading group placement of the students on the basis of Chapter 1 participation. By this means it was possible to identify sustaining effects of Chapter 1 participation because four of the eight students served in the primary grades were placed in average groups (groups three and four) and the remaining four were placed in group five, the highest of the below average groups. In terms of grade level equivalency (as determined by the publisher), group three was approximately two months behind "average" in the reading program, group four was one semester behind "average" and group five was one year behind. Interpreted in these terms, it could be said that Chapter 1 was successful in helping students in the primary group achieve at grade level and succeed in the regular program.

However, such success cannot be claimed for the intermediate group. Although seven students were placed in group four or five, four of the eleven in this group had been removed from the regular reading program and placed in a special remedial program (reading group seven) which used materials from a different publisher.

To summarize the section on Chapter 1 participation and reading group placement, it was evident that students were significantly more likely to be placed in lower reading groups if they had been served by Chapter 1, were males, and/or came from low socioeconomic families. However, students served by Chapter 1 only in the primary grades were, by the end of fourth grade, placed in reading groups in the regular reading program that were "average" or less than one year below the average as established by the publisher. Therefore, it was claimed that Chapter 1 demonstrated sustaining effects for these students but not for those served in the intermediate grades.

As noted above, when the students in this sample entered fifth grade, the instructional practice of dividing students into reading groups at each grade level was changed to whole group instruction with flexible grouping on the basis of specific needs. Further, the reading program changed from the use of a traditional basal to the use of literature based anthologies and novel units. In terms of further research, the data from this study could be used as a bench mark for an evaluation of the effects of these changes in instructional practice.

Chapter 1 participation and success in the regular program as measured by student voluntary reading. Based on correlation coefficients, it appeared the two measures of voluntary reading, library circulation and participation in a reading motivation program, were separate domains of behavior. It may have been that students who checked-out the most books had a tendency to check-out books and return them quickly without reading them; it may have been that those who reported the most reading had more access to books in the classroom, at home, or at the public library; it may have been that some of the best readers had outgrown the need for extrinsic motivation by grades four and five and simply did not bother to report their reading; or it may have been that students experienced restrictions on their access to the library on the basis of homeroom teacher assignments and therefore demographic and Chapter 1 participation variables were rendered meaningless.

Demographic variables tended to correlate negatively with all measures of recreational reading, including measures of participation in Chapter 1. An analysis of variance of Chapter 1 participation and measures of voluntary reading failed to identify any significant differences on the basis of Chapter 1 participation. Assuming that Chapter 1 students would have lower levels of voluntary reading, then it could be concluded that Chapter 1 participation had sustaining effects because Chapter 1 students did not appear different from non-Chapter 1 students on these measures. Because this is highly speculative, it may be a question worthy of additional research.

It was evident that boys participated less in recreational reading as measured by library circulation and reporting of reading done outside of school, significantly so on the fourth grade measure. Although this was an expected result, it was not a desired result, and it may be worth the effort to explore ways to improve the participation of boys in voluntary reading.

Chapter 1 participation and success in the regular program as measured by student attitudes towards reading. McKenna and Kear (1990) developed an instrument to measure student attitudes towards reading which was administered to all students at Briggs

School in September 1990 as part of an independent but related study. This attitude survey provided two measures: attitude toward recreational reading and attitude toward academic reading.

As expected, attitudes towards recreational and academic reading were positively and significantly correlated with each other. It was noted that all the demographic variables were negatively correlated with attitude towards recreational reading with the exception of family status. The significant correlation between sex and attitude toward recreational reading (boys had less positive attitudes than girls) could be interpreted as an indication that the reading program may need to be evaluated for possible bias on the basis sex.

Correlation coefficients indicated that Chapter 1 students, older students, boys, and students from low socioeconomic families had less positive attitudes towards reading than their counterparts.

Analysis of variance showed there were no significant differences between the means of either measure of attitude toward reading on the basis of the degree of participation in Chapter 1. If it were assumed that students who participate in Chapter 1 would have less positive attitudes towards reading (as hinted by the negative but not significant correlations), then it would be reasonable to conclude that Chapter 1 students, especially those served in the intermediate grades, would appear different from the non-Chapter 1 students using analysis of variance. That this expected result did not occur was taken as additional evidence for the sustaining effects of Chapter 1 participation. Again, this was speculation and in need of further study.

Chapter 1 participation and success in the regular program as measured by grade point averages in social studies and science. Correlation coefficients between social studies and science grade point averages and Chapter 1 participation clearly indicated that the more a student participated in Chapter 1, the more likely the student would have a lower grade point average in social studies and science classes in both grades three and four. Using these data, the only conclusion possible was that Chapter 1 participation failed to promote success in the regular program.

However, analysis of variance showed that those who received Chapter 1 only in the primary grades were not statistically different from those who did not receive Chapter 1 service on the social studies and science grades in grade four. This indicates that the primary group had "closed the gap" in terms of these report card grades and had achieved success in the regular program outcomes. In contrast to this, the students who continued to receive Chapter 1 service in the intermediate grades failed to "close the gap." This demonstrated that Chapter 1 had sustaining effects in the regular program but only for the primary group and only on the grade four report cards.

Although these data pointed to the conclusion that Chapter 1 failed to have positive effects upon the intermediate group of students, it may have been the case that Chapter 1 caused the lower grades. In order to receive Chapter 1 services, students had to leave their classroom and for many this occurred during the time when social studies or science were scheduled. Because no data on this question had ever been gathered, it may be appropriate to do so in the future.

Chapter 1 participation and success in the regular program as measured by teacher judgments of work habits and attitudes. The more a student participated in the Chapter 1 program, as measured by total years of service, the more likely the student was rated low in the area of work habits and attitudes on the report cards. Although negative and weak at grade one, the negative correlations between Chapter 1 participation and work habits and attitudes ratings became stronger and shifted from non-significance to significant at the .05 level at grades three and four. One possible explanation for this was that students who received Chapter 1 service in grade three or four may have appeared "different" from the students not served in those grades in the eyes of their teachers. But it may also have been that their failure to internalize appropriate school behaviors was closely linked with their need for Chapter 1 service.

One perspective places the blame on students whose "bad attitudes" rather than low ability caused them to achieve less and get lower scores on standardized tests, thereby increasing their chance of participation in Chapter 1. An alternative view is that the failure of these students to exhibit appropriate behavior is a failure of the total school program (including Chapter 1) to teach these behaviors. A third view states that as content becomes increasingly complex in the intermediate grades, students experiencing academic frustration also exhibit behavior problems.

Although boys tended to have lower ratings, it may be more than significant that the only demographic variable significantly correlated with the work habits and attitudes index was socioeconomic status which was negative at all grades and significant at grades two and four. Thus, it appeared that low socioeconomic status was closely linked with lower ratings by classroom teachers. As above, this may have been a failure on the part of the student (for whatever reason) to internalize appropriate school behaviors. It may also have been a failure on the part of the school to appropriately respond to the needs of children who come from low socioeconomic homes.

Use of analysis of variance highlighted the negative relationship between Chapter 1 participation and teacher ratings of work habits and attitudes. No difference between any of the three groups (no Chapter 1, primary, intermediate) was evident at grades one and two using this statistical test. Thus, it appeared participation in Chapter 1 at those grades was not linked to behavior problems by regular classroom teachers. However, at grades three and four, differences between the intermediate group and the other two groups were statistically significant. Because there was no difference in ratings between the no Chapter 1 and the primary groups at grade three and four, it could be concluded that this was evidence of sustaining effects of Chapter 1 for the primary group on this measure. As for the intermediate group, again there was no evidence of "closing the gap."

Before coming to a definitive conclusion regarding the relationship between work habits and attitudes as measured on report cards and Chapter 1 participation, it may be worth asking whether or not improved behavior in the classroom is a legitimate outcome of Chapter 1 participation. Because appropriate behavior is an important outcome of the regular program of the school and because the mission of Chapter 1 is to help students succeed in the regular program, it seems appropriate to expect Chapter 1 (along with all school programs) to assist in this area. A great deal of creative problem solving will be necessary, not only to resolve this question, but also to find ways in which Chapter 1 (as well as other school programs) can have an impact upon student classroom behaviors.

Lessons learned from this pilot study which may be applicable for a district-wide study

The most important lesson learned from this pilot study was that any district-wide evaluation system will require the investment of significant amounts of time and expertise before useful results will be obtained. Using cumulative files as the primary source of data, it was estimated it would take between 10 to 15 minutes of clerical time per student to locate and transfer the data to a data gathering form. It would also take an additional 10 to 15 minutes per student to enter this data in a data base file adequate for such a study. It was estimated that the time needed for one person to gather and enter this data for one class of 60 students was about one full work week.

A second lesson learned was that it requires a high degree of sophistication with computers and statistical procedures to design the computer data base files. It was estimated that a minimum of 60 hours was devoted to the creation of the DB Master data base files. The switch to AppleWorks was made to save time in the completion of this pilot study. However, AppleWorks was not capable of processing the large amounts of data which would be contained in a district-wide data base. (One possible implementation model would call for data to be entered using AppleWorks files at the building level which are then merged into a large DB Master file at the district level.)

Statistical procedures were done using App-Stat, an Apple II based software program. It was not only difficult to learn to use, it lacked the capacity for processing of the data in this pilot study. A different statistical program must be located before a large scale Chapter 1 evaluation system can be implemented at the district level. It was estimated that the time necessary to run the statistical tests, analyze the data, and draft a report for use within the district would be in the area of one full work week for each of the research questions addressed in this study.

Despite these logistical limitations, the question must be raised as to whether or not the results of this pilot study can stimulate sufficient reflection on the quality of the Chapter 1 program. Can analysis of cumulative file data stimulate ideas for improvement of the overall educational program of the district to justify the investment of resources in for a district-wide study? This question can only be answered at the highest administrative levels of the district.

Perhaps an affirmative answer is possible if such a district-wide evaluation system could be used to evaluate other programs and services provided by the district. It would then be possible to conduct outcome based evaluations of the educational program of the district on selected sub-populations within the student body. Another use would be an annual "report card" of the degree to which the district meets instructional goals in various areas.

CONCLUSIONS

Conclusions about the effects of Chapter 1 participation on measures of program outcomes. Significant evidence was found for the sustaining effects of Chapter 1 participation. This was made clear when students were blocked into three groups on the basis of their participation in Chapter 1: (a) a group of 33 students which did not receive Chapter 1 services, (b) a group of 8 students which received Chapter 1 services only in the primary grades of one and two, and (c) a group of 11 students which received Chapter 1 services in grades three, four, or five. It was found that students in the primary group were able to achieve the Chapter 1 program goal of "closing the gap" with non-Chapter 1 students on many measures of regular program outcomes. In contrast to the primary group, the students in the intermediate group were significantly different from those who never participated in Chapter 1. Despite Chapter 1 service, they did not reach the goal of "closing the gap" with the non-Chapter 1 students.

Conclusions regarding the establishment of a district-wide Chapter 1 evaluation system. This study was also conducted as a pilot study for a district-wide evaluation of the sustaining effects of participation in Chapter 1. As such, the major conclusion reached was that prior to the implementation of a district wide evaluation system careful attention must be given to the benefits to be derived from such a system. Possible benefits would include the ability to evaluate various programs and services of the district, the ability to monitor and report progress on district instructional goals, and the ability to conduct outcome based assessments of the effectiveness of the program for various subgroups of the student population. Costs for such a system will include training, clerical time, and computer hardware and software sufficient to handle the data. In addition, it will be necessary to budget for personnel with the expertise to design the data files, train the clerical personnel, perform the appropriate statistical tests, interpret the results, and present the results to district decision makers in a useful format to ensure the goal of program improvement.

RECOMMENDATIONS FOR FURTHER STUDY

This study leaves many unanswered questions which could form the basis for further research. Among these are:

1. Would it be possible to identify measures which could be used at Kindergarten or first grade to identify severely disadvantaged students who are likely to fall into the intermediate group? If identified, would it be possible to provide appropriate Chapter 1 service to these students to prevent their academic failure in the intermediate grades?
2. If this study were continued to include data from these students as they complete fifth and sixth grades, would the evidence for sustaining effects still be present at those grade levels?
3. Because there was a major change in the reading instruction program towards a whole language approach during the 1990-91 school year, would a replication of this study in three years obtain similar results? This question asks if there would be evidence that the change in the regular reading program would have a positive impact on the measures of regular education outcomes explored in this study as they relate to Chapter 1 participation.
4. What additional measures of voluntary reading could be identified which could provide a better indication of this important regular program outcome?

POSSIBLE PROGRAM IMPROVEMENT RECOMMENDATIONS

These recommendations are not limited to the Chapter 1 program in isolation but involve the entire educational program of the building.

1. Consideration should be given to greater concentration of Chapter 1 resources at the primary grades in an attempt to reduce the number of students showing evidence of need in the intermediate grades.

2. Because of the presence of low IQ manifest in the Chapter 1 students served in the intermediate grades, attempts could be made to locate or design and implement instructional strategies which will increase the verbal abilities of these students during the primary grades. Implied in this recommendation is the need to select measures of verbal ability appropriate for students in the primary grades.

3. The consistent evidence that boys achieve at lower levels than girls calls for an examination of the building program. First must come an attempt to identify other measures which may reveal evidence of sex bias. This should be followed with attempts to identify strategies to modify the program to accommodate the special needs of boys with the goal of improving their performance on all measures of program outcomes.

4. As with sex, the role of low socioeconomic status must be more thoroughly examined in the context of the building program. Because low socioeconomic students appeared to achieve at lower levels than did high socioeconomic students, it may be appropriate to identify strategies to modify the existing program to meet the special needs of low socioeconomic students with the goal of increasing their achievement on these measures of regular program outcomes.

5. District leaders should give consideration to the benefits to be derived from the establishment of a district-wide data base which could be used to evaluate the progress of selected groups of students on the basis of regular education outcomes.

A FINAL WORD

This study represents the first attempt to evaluate the role of Chapter 1 participation on regular program outcomes in the Maquoketa Schools. Using data on students at Briggs Elementary School, it offers the first systematic study of a group of students who attended the school during the majority of their elementary career. The results of this study may stimulate reflection upon the effectiveness of the total building program from a longitudinal perspective. In this sense, it may go beyond the purpose of evaluating the sustaining effects of Chapter 1 participation and prompt ideas for program improvement within the entire educational program of the building.

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APPENDIX

MAQUOKETA COMMUNITY SCHOOL PROGRESS REPORT FOR GRADE 1

Name ______________________________

School: ☐ Briggs ☐ Cardinal

Teacher ______________________ Year __________

EXPLANATION OF MARKING SYSTEM

G - DOING A GOOD JOB
S - SATISFACTORY
I - IMPROVING
N - NEEDS IMPROVEMENT

Areas of concern are marked with a (✓)

(*)Working below grade level

QUARTER	1	2	3	4
READING				
Comprehension				
Sight Words				
Word Attack				
Oral Reading				
Study Skills				
LISTENING				
HANDWRITING				
CREATIVE WRITING				
SPELLING				
MATHEMATICS				
SOCIAL STUDIES				
SCIENCE				
ART				
Shows Imagination & Creativity				
Shows Growth in Skills				
Participation in Class				
Class Behavior				
MUSIC				
Singing Skills				
Knowledge of Concepts				
Cooperation				

ATTENDANCE

	1	2	3	4
PRESENT				
ABSENT				
TARDY				

QUARTER	1	2	3	4
PHYSICAL EDUCATION				
Conduct				

WORK HABITS & ATTITUDES

	S	N	S	N	S	N	S	N
Listens Well								
Follows Directions								
Begins Work Immediately								
Finishes Work on Time								
Does Work Neatly								
Shows Self Control								
Gets Along Well With Others								
Takes Care of Belongings								
Respects Property								

A (✓) indicates child is receiving this service

L.D.				
Chapter I				

COMMENTS: ______________________________

ASSIGNED TO GRADE _______

MAQUOKETA COMMUNITY SCHOOL PROGRESS REPORT FOR GRADE 2

ame ______________________________

☐ Briggs ☐ Cardinal

Tea[illegible]r ______________________ Year ________

EXPLANATION OF MARKING SYSTEM

- DOING A GOOD JOB
- SATISFACTORY
- IMPROVING
- NEEDS IMPROVEMENT

Areas of concern are marked with a (✓)
Working below grade level (*)
Areas not covered are marked with a (-)

QUARTER	1	2	3	4
EADING				
evel				
ffort				
omprehension				
ecoding Skills				
tudy Skills				
ral Reading				
ocabulary				
ISTENING				
ffort				
ANDWRITING				
ffort				
se in Written Work				
PE[illegible]NG				
ffort				
pelling Words				
se in Written Work				
ANGUAGE				
ffort				
xpresses Written Ideas Clearly				
apitalization				
unctuation				
ATHEMATICS				
ffort				
ddition Facts through 10				
ubtraction Facts through10				
ddition Facts through 18				
ubtraction Fact through 18				
lace Value (tens-hundreds)				
egrouping for Addition				
egrouping for Subtraction				
tory Problem Solving				
ea[illegible]ment				
OCIAL STUDIES				
fort				

ATTENDANCE

	1	2	3	4
PRESENT				
ABSENT				
TARDY				

QUARTER	1	2	3	4
SCIENCE				
Effort				
HEALTH				
Effort				
ART				
Shows Imagination & Creativity				
Shows Growth in Skills				
Participation in Class				
Class Behavior				
MUSIC				
Singing Skills				
Knowledge of Concepts				
Cooperation				
PHYSICAL EDUCATION				
Conduct				

WORK HABITS & ATTITUDES

	S	N	S	N	S	N	S	N
Listens Well								
Follows Directions								
Begins Work Immediately								
Finishes Work on Time								
Does Work Neatly								
Shows Self Control								
Gets Along Well With Others								
Takes Care of Belongings								
Respects Property								

A (✓) indicates child is receiving this service

L.D.				
Chapter I				

COMMENTS: ______________________________

ASSIGNED TO GRADE ________

MAQUOKETA COMMUNITY SCHOOL PROGRESS REPORT FOR GRADE 3 - 5

Name ______________________________

School: ☐ Briggs ☐ Cardinal GRADE ____

T[illegible]her ______________________ Year __________

EXPLANATION OF MARKING SYSTEM

A - Excellent
B- Above Average
C - Average
D- Below Average
F - Failing
I - Incomplete

EFFORT
H - HIGH
S - SATISFACTORY
U - UNSATISFACTORY
(*) - Working Below Grade Level
(✓) - Improvement Needed

QUARTER	1	2	3	4
READING				
Level				
Effort				
Comprehension				
Vocabulary				
SPELLING				
Level				
Effort				
Application in Written Work				
[illegible]GUAGE				
Effort				
Written Expression				
Handwriting				
SOCIAL STUDIES				
Effort				
MATHEMATICS				
Effort				
Basic Facts				
Concepts				
SCIENCE				
Effort				
HEALTH				
Effort				
ART				
[illegible]gination & Creativity				
Growth in Skills				
Participation in Class				
Class Behavior				

ATTENDANCE

	1	2	3	4
PRESENT				
ABSENT				
TARDY				

QUARTER	1	2	3	4
MUSIC				
Singing Skills				
Knowledge of Concepts				
Application Projects				
Cooperation				
PHYSICAL EDUCATION				
Conduct				

WORK HABITS & ATTITUDES KEY: S - SATISFACTORY
U - UNSATISFACTORY
N - NEEDS IMPROVEMENT

Accepts Responsibility				
Shows Cooperation & Respect				
Shows Self Control				
Does Work Neatly				
Makes Good Use of Time				

A (✓) indicates child is receiving this service

L.D.				
Chapter I				

COMMENTS: ______________________________

ASSIGNED TO GRADE ________